



United States Environmental Protection Agency
Washington, DC 20460

Completion Form For Injection Wells

Administrative Information

1. Permittee

Address (Permanent Mailing Address) (Street, City, and ZIP Code)

2. Operator

Address (Street, City, State and ZIP Code)

3. Facility Name Telephone Number

Address (Street, City, State and ZIP Code)

4. Surface Location Description of Injection Well(s)
State County

Surface Location Description
 1/4 of 1/4 of 1/4 of 1/4 of Section Township Range

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface
Location ft. frm (N/S) Line of quarter section
and ft. from (E/W) Line of quarter section.

Well Activity

- ☐ Class I
☐ Class II
☐ Brine Disposal
☐ Enhanced Recovery
☐ Hydrocarbon Storage
☒ Class III
☐ Other

Well Status

- ☒ Operating
☐ Modification/Conversion
☐ Proposed

Type of Permit

- ☐ Individual
☒ Area : Number of Wells

Lease Number

Well Number

Submit with this Completion Form the attachments listed in Attachments for Completion Form.

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment (Ref. 40 CFR 144.32)

Name and Official Title (Please type or print) Signature  Date Signed

PAPERWORK REDUCTION ACT

The public reporting and record keeping burden for this collection of information is estimated to average 49 hours per response for a Class I hazardous facility, and 47 hours per response for a Class I non-hazardous facility. Burden means the total time, effort, or financial resource expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal Agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to the collection of information; search data sources; complete and review the collection of information; and, transmit or otherwise disclose the information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including the use of automated collection techniques to Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed forms to this address.

Attachments to be submitted with the Completion report:

I. Geologic Information

1. Lithology and Stratigraphy

A. Provide a geologic description of the rock units penetrated by name, age, depth, thickness, and lithology of each rock unit penetrated.

B. Provide a description of the injection unit.

- (1) Name
- (2) Depth (drilled)
- (3) Thickness
- (4) Formation fluid pressure
- (5) Age of unit
- (6) Porosity (avg.)
- (7) Permeability
- (8) Bottom hole temperature
- (9) Lithology
- (10) Bottom hold pressure
- (11) Fracture pressure

C. Provide chemical characteristics of formation fluid (attach chemical analysis).

D. Provide a description of freshwater aquifers.

- (1) Depth to base of fresh water (less than 10,000 mg/l TDS).
- (2) Provide a geologic description of aquifer units with name, age, depth, thickness, lithology, and average total dissolved solids.

II. Well Design and Construction

1. Provide data on surface, intermediate, and long string casing and tubing. Data must include material, size, weight, grade, and depth set.
2. Provide data on the well cement, such as type/class, additives, amount, and method of emplacement.
3. Provide packer data on the packer (if used) such as type, name and model, setting depth, and type of annular fluid used.

4. Provide data on centralizers to include number, type and depth.

5. Provide data on bottom hole completions.

6. Provide data on well stimulation used.

III. Description of Surface Equipment

1. Provide data and a sketch of holding tanks, flow lines, filters, and injection pump.

IV. Monitoring Systems

1. Provide data on recording and nonrecording injection pressure gauges, casing-tubing annulus pressure gauges, injection rate meters, temperature meters, and other meters or gauges.

2. Provide data on constructed monitor wells such as location, depth, casing diameter, method of cementing, etc.

V. Logging and Testing Results

Provide a descriptive report interpreting the results of geophysical logs and other tests. Include a description and data on deviation checks run during drilling.

VI. Provide an as-built diagrammatic sketch of the injection well(s) showing casing, cement, tubing, packer, etc., with proper setting depths. The sketch should include well head and gauges.

VII. Provide data demonstrating mechanical integrity pursuant to 40 CFR 146.08.

VIII. Report on the compatibility of injected wastes with fluids and minerals in both the injection zone and the confining zone.

IX. Report the status of corrective action on defective wells in the area of review.

X. Include the anticipated maximum pressure and flow rate at which injection will operate.

TECHNICAL MEMORANDUM

14 September 2018
File No. 129687-010

TO: Florence Copper Inc.
Ian Ream, Senior Hydrogeologist

FROM: Haley & Aldrich, Inc.
Lauren Candreva, R.G.

Subject: Drilling, Installation, and Integrity Testing Summary
PTF Recovery Well R-02
Florence Copper Inc., Florence, Arizona



This document summarizes the drilling, installation, and testing of Production Test Facility (PTF) recovery well R-02 for Florence Copper Inc. (Florence Copper) in Florence, Arizona, including the equipment used to perform the work, completion, and the results of well testing activities. Separate well completion reports have been created for each PTF well.

The Arizona Department of Water Resources Registry ID for well R-02 is 55-227701 and the Well Registry Report is included in Appendix A. Well R-02 is located in the southwest quarter of the northeast quarter of the southwest quarter of Section 28 of Township 4 north, Range 9 East of the Gila and Salt River Baseline and Meridian (D(4-9)28CAC). Well R-02 is located within the Underground Injection Control (UIC) Permitted Area of Review (AOR) for UIC Permit R9UIC-AZ3-FY11-1 and was completed as a Class III recovery well for the PTF (Figure 1).

Florence Copper contracted Hydro Resources, Inc. (Hydro Resources) to drill, install, and test well R-02 in accordance with *Well Specification: Drilling, Installation, and Testing of Class III Injection and Recovery Wells, Production Test Facility, Florence, Arizona* (Haley & Aldrich, Inc. [Haley & Aldrich], 2017). A Midway 3500 drilling rig was used for all drilling and construction activities. Haley & Aldrich provided oversight of drilling activities, geophysical logging, well installation, and testing. All reported depths are in feet below ground surface unless otherwise noted.

I. Geologic Information

1. Lithology and Stratigraphy

A. Geology of Penetrated Units

The geology penetrated during the drilling of the Class III well R-02 is summarized in the table below and a lithologic log is included in Appendix B.

| Lithologic Unit Name | Depth to Bottom of Unit (feet) | Thickness of Unit (feet) | Lithology and Age of Unit |
|---------------------------------|--------------------------------|--------------------------|----------------------------------|
| Upper Basin Fill Unit (UBFU) | 283 | 283 | Alluvium; Quaternary to Tertiary |
| Middle Fine-Grained Unit (MFGU) | 302 | 19 | Alluvium; Tertiary |
| Lower Basin Fill Unit (LBFU) | 400 | 98 | Alluvium; Tertiary to Cretaceous |
| Bedrock Oxide Unit (Oxide) | Not encountered | >825 | Igneous porphyry – Precambrian |

B. Description of Injection Unit

| Name | Bedrock Oxide Unit |
|--|---|
| Depth Drilled | 1,225 feet |
| Thickness | >825 feet |
| Formation Fluid Pressure | Atmospheric plus head of freshwater – no additional formation pressure |
| Age of Unit | Precambrian with intrusions of Precambrian to Tertiary rocks |
| Porosity ¹ | Approximately 6 to 8.5% |
| Permeability | Hydraulic Conductivity = 0.56 feet per day |
| Bottom Hole Temperature | 41.7 degrees Celsius |
| Lithology | Igneous porphyry – quartz monzonite, granodiorite with diabase and andesite dykes (detailed log included in Appendix B) |
| Bottom Hole Pressure | Approximately 430 pounds per square inch (PSI) (pressure exerted by the column of freshwater with no additional contribution from formation pressure) |
| Fracture Pressure | 0.65 PSI per foot |
| ¹ Porosity values for the bedrock oxide unit are approximate values from calculated neutron porosity values from injection well borehole surveys. | |

C. Chemical Characteristics of Formation Fluid

The chemical characteristics of the formation fluid in the injection zone are summarized below and are the results of the sampling of the center PTF wellfield well R-09. The table below summarizes the primary chemical characteristics detected in a formation fluid sample collected on 23 April 2018; the complete analytical report is included in Appendix C.

| Analyte | Result (mg/L) |
|--|---------------|
| Metals | |
| Aluminum | <0.08 |
| Antimony | <0.005 |
| Arsenic | 0.0016 |
| Barium | 0.071 |
| Beryllium | <0.0005 |
| Cadmium | <0.00025 |
| Calcium | 140 |
| Chromium | 0.0051 |
| Cobalt | <0.00025 |
| Copper | 0.011 |
| Iron | <0.30 |
| Lead | <0.0005 |
| Magnesium | 27 |
| Manganese | 0.002 |
| Mercury | <0.001 |
| Nickel | 0.0033 |
| Potassium | 6.8 |
| Selenium | <0.0025 |
| Sodium | 170 |
| Thallium | <0.0005 |
| Zinc | <0.04 |
| Anions | |
| Bicarbonate | 150 |
| Chloride | 310 |
| Fluoride | <0.5 |
| Nitrate | 8.8 |
| Sulfate | 190 |
| Field Parameters | |
| Total Dissolved Solids | 1,000 |
| pH | 7.8 |
| Radiochemicals | |
| Uranium | 0.016 |
| Notes: mg/L = milligrams per liter | |

Sampling results for well R-02 are included in the *PTF Mine Block Ambient Groundwater Concentrations and Initial Discharge Characterization of the Underground Workings* (Brown and Caldwell, 2018).

D. Description of Freshwater Aquifers

- 1) The depth to the base of the freshwater aquifer is defined by the interface where deeper formation fluid exhibits a total dissolved solids (TDS) value of 10,000 milligrams per liter (mg/L). The depth of the 10,000 mg/L interface is deeper than all of the wells drilled at the site, and consequently, has not been defined.
- 2) The geologic description of the aquifer units is included below:

| Aquifer Unit Name | Age | Depth (feet) | Thickness (feet) | Lithology | Average Total Dissolved Solids ¹ (mg/L) |
|---|---------------------|--------------|------------------|-----------|--|
| UBFU | Quaternary/Tertiary | 0 to 283 | 283 | Alluvium | 914 |
| LBFU | Tertiary | 302 to 400 | 98 | Alluvium | 754 |
| Notes: ¹ Average TDS values calculated from UBFU and LBFU monitoring well ambient monitoring results near the PTF. | | | | | |

II. Well Design and Construction

1. Well R-02 Casing Installed:

| Casing | Material | Diameter (inches) | Weight (pounds per foot) | Depth (feet) | Borehole Diameter (inches) | Drilling Method |
|--|---|------------------------|--------------------------|--|---|---|
| Surface | Mild Steel | 24 O.D. 23¾ I.D. | 94.71 | 0 to 40 | 30 | Solid-stem auger |
| Overburden (intermediate) | Mild Steel – bottom 40 feet poly coated | 14 O.D. 13¾ I.D. | 47.36 | 0 to 500 | 20 | Reverse flooded rotary |
| Well Casing | Fiberglass Reinforced Plastic | 5.47 O.D. 4.74 I.D. | 5.40 | -1.4 to 521 | Inside overburden casing to 499 feet; 12¾ | Inside overburden casing/reverse flooded rotary |
| Screen | PVC SCH80 with 0.080-inch wide slots | 5.56 O.D. 4.81 I.D. | 4.08 | 521 to 641 661 to 881 901 to 1,202 | 12¾ | Reverse flooded rotary |
| Blank Intervals | PVC SCH80 | 5.56 O.D. 4.81 I.D. | 14.75 | 641 to 661 881 to 901 | 12¾ | Reverse flooded rotary |
| Notes: I.D. = inside diameter O.D. = outside diameter PVC = polyvinyl chloride SCH = Schedule | | | | | | |

2. Well Cement

| Cement Interval | Cement Type | Additives | Amount Installed (cubic yards) | Method of Emplacement |
|-------------------|----------------------------|-----------|--------------------------------|--|
| Surface Casing | Type V Neat 21 sack slurry | None | 5 | Submerged tremie |
| Overburden Casing | Type V Neat 21 sack slurry | None | 24.8 | Displacement - installed through drillable grout shoe with one-way stab-in valve, welded to the bottom of the casing |
| Well Casing | Type V Neat 21 sack slurry | None | 18.0 | Submerged Tremie |

Field forms documenting pipe tallies, annular materials, and cement tickets are included in Appendix D.

3. Annular Packers

No annular packers were used during construction of well R-02.

4. Centralizers

| Casing | Centralizer Type | Number and Spacing |
|--|------------------------------|------------------------------|
| Overburden | Mild Steel – welded | 13 installed – every 40 feet |
| Well – FRP and PVC | Stainless steel – Heavy Duty | 31 installed – every 40 feet |
| Notes: FRP = fiberglass reinforced plastic PVC = polyvinyl chloride | | |

5. Bottom Hole Completion

There is no bottom hole completion as this is not an oil/gas well. The well was completed at the bottom with a stainless-steel endcap of the same diameter as the well screen.

6. Well Stimulation

No well stimulation was used during the drilling and construction of well R-02.

III. Description of Surface Equipment

1. Surface Equipment

Well R-02 is a recovery well and has been equipped with a submersible pump. The 2-inch diameter discharge pipe extends from the well head and into the manifold that conveys the fluid directly to the solvent extraction/electrowinning plant on-site. A diagram of the wellhead is included as Figure 2.

IV. Monitoring Systems

1. Well Monitoring Equipment

| Equipment Type | Location | Type | Purpose |
|-----------------------------|------------------------------------|--------------|-------------------------------|
| Annular Pressure Transducer | Well Annulus – 638 feet bgs | Recording | Monitor water column/pressure |
| Pressure Transducer | Well Casing – approx. 400 feet bgs | Recording | Monitor water column/pressure |
| Flow Meter | Wellhead | Recording | Monitor extraction rate |
| Pressure Gauge | Wellhead | Nonrecording | Monitor wellhead pressure |

2. Monitoring Wells

There are a total of 16 monitoring wells associated with the PTF: 7 point-of-compliance (POC) wells, 7 United States Environmental Protection Agency (USEPA) supplemental monitoring wells, and 2 operational monitoring wells. The POC wells are located outside the AOR and are not constructed as Class III wells. The supplemental monitoring and operational monitoring wells are located within the AOR and are constructed as Class III wells as required by the UIC Permit. The wells are summarized in the tables below by type.

| POC Wells | | | | | | |
|-----------|---|-----------------|---|---------------------|--------------------------------|--------------------------------|
| Well ID | Location X/Y (State Plane NAD 83) | Depth (feet) | Well Nom. Diameter (inches) | Cementing Method | Screened Interval (feet) | Screened Lithologic Unit |
| M14-GL | 846750.23 746461.52 | 859 | 5 9/16 OD | Submerged tremie | 778 to 838 | LBFU |
| M15-GU | 846697.17 746464.82 | 615 | 5 9/16 OD | Submerged tremie | 554 to 594 | LBFU |
| M22-O | 846751.26 746514.47 | 1,140 | 5 9/16 OD to 528 feet; 4½ OD to 1,140 feet | Submerged tremie | 932 to 1,130 | Oxide |

| POC Wells | | | | | | |
|-----------------------|---|-----------------|-----------------------------------|---------------------|--------------------------------|--------------------------------|
| Well ID | Location X/Y (State Plane NAD 83) | Depth (feet) | Well Nom. Diameter (inches) | Cementing Method | Screened Interval (feet) | Screened Lithologic Unit |
| M23-UBF | 846688.13 746512.48 | 250 | 6 5/8 OD | Submerged tremie | 210 to 250 | UBFU |
| M52-UBF | 851092.00 774178.00 | 274 | 5 9/16 | Submerged tremie | 198 to 273 | UBFU |
| M54-LBF | 847331.96 746682.61 | 630 | 5 9/16 | Submerged tremie | 310 to 629 | LBFU |
| M54-O | 847342.99 746702.36 | 1,199 | 5 9/16 | Submerged tremie | 668 to 1,198 | Oxide |
| OD = outside diameter | | | | | | |

| Supplemental Monitoring Wells | | | | | | |
|-------------------------------|---|-----------------|-----------------------------------|---------------------|--------------------------------|--------------------------------|
| Well ID | Location X/Y (State Plane NAD 83) | Depth (feet) | Well Nom. Diameter (inches) | Cementing Method | Screened Interval (feet) | Screened Lithologic Unit |
| M55-UBF | 847541.46 746280.63 | 261 | 5 | Submerged tremie | 240 to 260 | UBFU |
| M56-LBF | 847518.70 746303.41 | 340 | 5 | Submerged tremie | 320 to 340 | LBFU |
| M57-O | 847378.37 746248.93 | 1,200 | 5 | Submerged tremie | 523 to 1,199 | Oxide |
| M58-O | 847672.23 746595.97 | 1,200 | 5 | Submerged tremie | 594 to 1,199 | Oxide |
| M59-O | 847934.95 746218.89 | 1,201 | 5 | Submerged tremie | 534 to 1,199 | Oxide |
| M60-O | 847599.37 745903.70 | 1,201 | 5 | Submerged tremie | 444 to 1,200 | Oxide |
| M61-LBF | 848184.46 746148.88 | 629 | 5 | Submerged tremie | 429 to 629 | LBFU |

| Operational Monitoring Wells | | | | | | |
|------------------------------|---|-----------------|-----------------------------------|---------------------|----------------------|--------------------------------|
| Well ID | Location X/Y (State Plane NAD 83) | Depth (feet) | Well Nom. Diameter (inches) | Cementing Method | Screened Interval | Screened Lithologic Unit |
| MW-01-LBF | 847487.97 746360.54 | 444 | 5 | Submerged tremie | 330 to 440 | LBFU |
| MW-01-O | 847499.04 746369.31 | 1,200 | 5 | Submerged tremie | 500 to 1,200 | Oxide |

V. Logging and Testing Results

Borehole geophysical logging was conducted on well R-02 in four phases: 1) open-hole surveys in the 20-inch borehole prior to installation of the overburden casing; 2) cased-hole surveys in the 14-inch casing; 3) open-hole surveys in the 12.25-inch borehole prior to installation of the well casing and screen; and 4) cased-hole surveys in the completed well.

The open-hole geophysical surveys completed at well R-02 included:

- Spontaneous potential;
- Natural gamma;
- Electrical resistivity (short and long normal);
- Caliper with calculated volume;
- Temperature;
- Sonic; and
- Deviation.

The cased-hole geophysical surveys completed included:

- Cement bond log (overburden steel casing);
- Very large borehole (VLB) acoustic (overburden steel casing);
- Sonic (for cement bond with fiberglass reinforced plastic [FRP]);
- 4 Pi Density (for cement bond with FRP);
- Dual Density (for cement bond with FRP);
- Natural Gamma;
- Fluid Conductivity;
- Temperature;
- Gyroscopic Deviation Survey; and
- Video Survey.

Open-hole geophysical surveys were used to support identification of the lithologic contacts, to evaluate the condition of the borehole, and to evaluate the deviation of the borehole.

The primary logs used to evaluate lithologic contacts are natural gamma ray, short (16-inch) and long (64-inch) normal electrical resistance, and single-point resistance. The lithologic contacts for the MFGU were selected based on the short and long resistance and the single point resistance. All the resistivity logs decreased and stayed consistently low through the Middle Fine-Grained Unit (MFGU). This contact is generally a relatively sharp decrease in resistance at the top of the unit and a gradual increase in resistance below the bottom of the unit.

The contact between the Lower Basin Fill Unit (LBFU) and the bedrock was identified primarily with natural gamma and correlated with the resistance logs. There is a consistent increase in gamma at the contact between the LBFU and the bedrock that had been identified and documented at the site during exploration in the 1990s. For well R-02, the gamma is consistently at approximately 80 to 85 American Petroleum Institute (API) units throughout the Upper Basin Fill Unit (UBFU) and MFGU, a slight increase to approximately 90 to 95 API units in the LBFU, and an increase at 400 feet to over 160 API units. After the increase at 400 feet, the natural gamma begins to vary significantly more than it did in the alluvial units. This change in the response of the natural gamma indicates the contact with the bedrock unit. Also, at this approximate depth the resistance increases gradually which is likely due to bedrock containing less water causing a generally increased resistivity.

Cased-hole geophysical surveys were conducted to evaluate the cement seal and the casing-cement bond, to document baseline fluid temperature and conductivity, and to evaluate the plumbness of the well. The cement-bond is discussed in Section VII.

Copies of all the open-hole geophysical logs and cased-hole temperature, fluid conductivity, and natural gamma are included in Appendix E; a figure summarizing the open-hole logs used to evaluate geology is included as Figure 3. The cased-hole logs used to evaluate cement bond are included in Appendix F.

VI. Well As-Built Diagram

A diagram showing the wellhead completion for well R-02 is included as Figure 2. A well as-built diagram for well R-02 is included as Figure 4.

VII. Demonstration of Mechanical Integrity

A demonstration of Part I mechanical integrity of the well was completed using a standard annular pressure test (SAPT) in accordance with Part II.E.3.a.i.A of the UIC Permit. Mechanical integrity will be demonstrated every 2 years during operations and will be confirmed by daily injection pressure monitoring that will be conducted per the UIC Permit once the well is operational. Well R-02 SAPT is summarized below.

The mechanical integrity of the blank well casing was tested by performing a SAPT on 11 April 2018. The SAPT was conducted by installing an inflatable straddle packer assembly in the well. The bottom packer was installed near the bottom of the FRP-cased portion of the well and the top packer was near the surface, the packers were inflated to form a seal against the casing. The bottom 5 feet of the packer drop pipe was perforated to allow for communication between the tubing and the annulus of the packer assembly. The drop pipe extended through the wellhead and a high pressure/low volume pump was attached to the drop pipe to pressurize the test interval. A valve on the drop pipe at the surface was used to isolate the test interval once the planned test pressure was achieved.

An In-Situ LevelTROLL® pressure transducer with a data logger was installed at the well head and was connected to the packer assembly annulus interval via a National Pipe Thread adapter. The LevelTROLL was used to monitor and record pressure inside the well during the SAPT. To conduct the SAPT, water was pumped from a nearby well immediately prior to testing. Before the water was pumped into the test well, the water temperature was measured to ensure that it was similar to the ambient groundwater temperature of the test well to reduce the potential of differential temperature effects on the well casing. The SAPT for the Class III well was conducted by applying hydraulic pressure to well casing and shutting in pressure between the packer and wellhead assembly, monitoring the shut-in pressure for a 30-minute period, then measuring the volume of water returned from the well casing after the pressure was released.

On 11 April 2018, the packer was installed to approximately 506 feet and the SAPT was conducted successfully three times. The USEPA SAPT form, a table of the data, and a chart of the data is provided in Appendix G.

Part II mechanical integrity is demonstrated by the cementing records included in this report (in accordance with Part II.E.3.ii.C of the UIC Permit) and will be demonstrated during operations by annular conductivity monitoring on the observation and multi-level sampling wells (in accordance with Part II.E.3.a.ii.A of the UIC Permit).

| Cemented Interval | Cement Type | Calculated Grout Volume (cubic yards) | Installed Grout Volume (cubic yards) |
|--------------------------|-----------------------------------|--|---|
| Surface Casing | Type V 21 sack neat cement slurry | 2.6 | 5 |
| Overburden Casing | Type V 21 sack neat cement slurry | 23.2 | 24.8 |
| Well Casing | Type V 21 sack neat cement slurry | 15.7 | 18.0 |

On 13 December 2017, a cement bond log was run on the overburden casing. On 11 April 2018, a suite of logs was run over the entire length of the completed well to verify the grout seal; a summary of the geophysical logs completed to demonstrate cement bond are included in Appendix F.

The cement bond of the steel casing was evaluated by the geophysical contractor by calculating a bond index. The bond index was calculated to be an average of 57 percent over the cement grouted interval from 4 to 495 feet. This data is included on the summary log in Appendix G. Because the bond index for well R-02 was lower than other wells at the PTF, a very large borehole (VLB) geophysical tool was run to investigate any potential deficiencies. The VLB data was used to generate a Cement Attenuation Decay Index (CADI) which is displayed on the well summary for R-02 included in Appendix F. The CADI data could only be collected to approximately 400 feet due to interference with mud in the casing. The CADI and density data indicate that there is uniform cement present below a low-density zone at approximately 145 to 158 feet.

There is not a bond log tool designed to evaluate cement bond with FRP casing, so the cement interval with FRP casing was evaluated using density logs. The logs collected included sonic and 4pi density. Based on the measured density of the FRP cased interval of well R-02, no significant cement deficiencies were noted in the sonic data collected from approximately 235 feet (static water level) to 496 feet, and

no significant deficiencies were noted in the 4pi density data collected from 15 to 496 feet. There were some very localized, low density intervals identified in the 4pi density logs but they were insignificant, only extending 2 to 3 feet. A summary of the FRP cased data is included in the well completion summary in Appendix G.

VIII. Compatibility of Injected Waste

The Florence Copper Project is a Class III mineral extraction project and does not include the injection of any waste products of any kind. The injected fluid (lixiviant) is a carefully constituted in-situ copper recovery solution that will be recovered and recycled following injection.

The compatibility of the lixiviant was evaluated as part of the geochemical modeling completed by Florence Copper and summarized in the *Geochemical Evaluation to Forecast Composition of Process Solutions for In-Situ Copper Recovery Pilot Test Facility at Florence Copper, Florence Arizona* (Daniel B. Stephens Inc., 2014) which was included in Attachment H of the UIC Permit Application.

IX. Status of Corrective Action on Defective Wells in the Area of Review

There are not currently any defective wells in the AOR.

X. Maximum Pressures and Flow Rates for R-02

| Maximum Operating Pressure | Maximum Flow (Extraction) |
|----------------------------|----------------------------|
| Atmospheric | No maximum extraction flow |

This well is a recovery well used to extract solution so there is no maximum flow. However, in accordance with Section 2.2.1.1 of the Aquifer Protection Permit (APP), the recovery rate for the entire wellfield must always exceed the injection rate on a daily average, and in accordance with Part II.E.5.a of the UIC Permit the recovery rate will not fall below 110 percent of the injection rate on a daily average.

XI. Well Development

Well R-02 was developed by the airlift method, followed by pumping, and was completed by Hydro Resources using a workover rig. To purge drilling fluids and solids, the well was air-lift developed from 23 to 29 March 2018 at various depths ranging from approximately 420 feet to 1,200 feet. During development, the airlift pump was turned on and off to surge the well. On 29 March 2018, approximately 55 gallons of chlorine was added to the well. The discharge was relatively clear and sand-free at the end of the airlift development period.

On 2 April 2018, a submersible pump was temporarily installed to approximately 1,160 feet to pump develop the well. Pump development was conducted at approximately 60 gallons per minute (gpm) from 2 to 3 April 2018, during which time the submersible pump was periodically turned off to surge the well. The pump intake was raised to 887 feet and 572 feet on 3 April 2018. The pumping water level during pump development was approximately 260 feet. The discharge was visually clear throughout the pump development period, with turbidity values less than 5 Nephelometric Turbidity Unit at the end of the development period. Well development forms are included in Appendix H.

XII. Well Completion

A well video survey was conducted on 11 April 2018; the video log report is included as Appendix I. The video log depths are presented in feet below the top of the casing and thus vary slightly from what is recorded; however, these values are the same with the correction for stick up.

The video log indicates the total depth reached was 1,193 feet.

A gyroscopic survey was also conducted on the completed well on 13 April 2018; the results are included in Appendix I.

The surveyed location for well R-02 is:

| Northing (feet) | Easting (feet) | Measuring Point Elevation (feet amsl) |
|--|----------------|---------------------------------------|
| 746202.30 | 847765.32 | 1481.81 |
| Notes: <i>Northing and easting locations provided in State Plane North American Datum 1983, vertical location provided in North American Vertical Datum 1988. amsl – feet above mean sea level</i> | | |

XIII. Downhole Equipment

On 3 July 2018, the permanent pump equipment was installed in the well. The equipment installed included the following:

- Wilo 7.5 horsepower, 40-gpm pump – intake at 810 feet;
- 2-inch Schedule 120 threaded and coupled polyvinyl chloride column pipe with 316L stainless steel couplers from the pump to approximately 500 feet;
- 2-inch Schedule 40 threaded and coupled 316L stainless steel column pipe with 316L stainless steel couplers from approximately 500 feet to the wellhead;
- 316L braided stainless steel safety cable was installed from the pump to the wellhead;
- Pressure transducer; and
- 1-inch nominal diameter sounding tube.

The type and depth of equipment installed in each well is not constrained by the UIC Permit or the APP. This information is provided in accordance with Section 2.7.4.3 of the APP. Operational consideration may require that the type and depth of equipment may need to be changed in response to conditions observed during operations.

XIV. References

Brown and Caldwell, Inc., 2018. *PTF Mine Block Ambient Groundwater Concentrations and Initial Discharge Characterization of the Underground Workings*. Prepared for Florence Copper. August.

Daniel B. Stephens, Inc., 2014. *Geochemical Evaluation to Forecast Composition of Process Solutions for In-Situ Copper Recovery Pilot Test Facility at Florence Copper, Florence Arizona*. Prepared for Florence Copper. May.

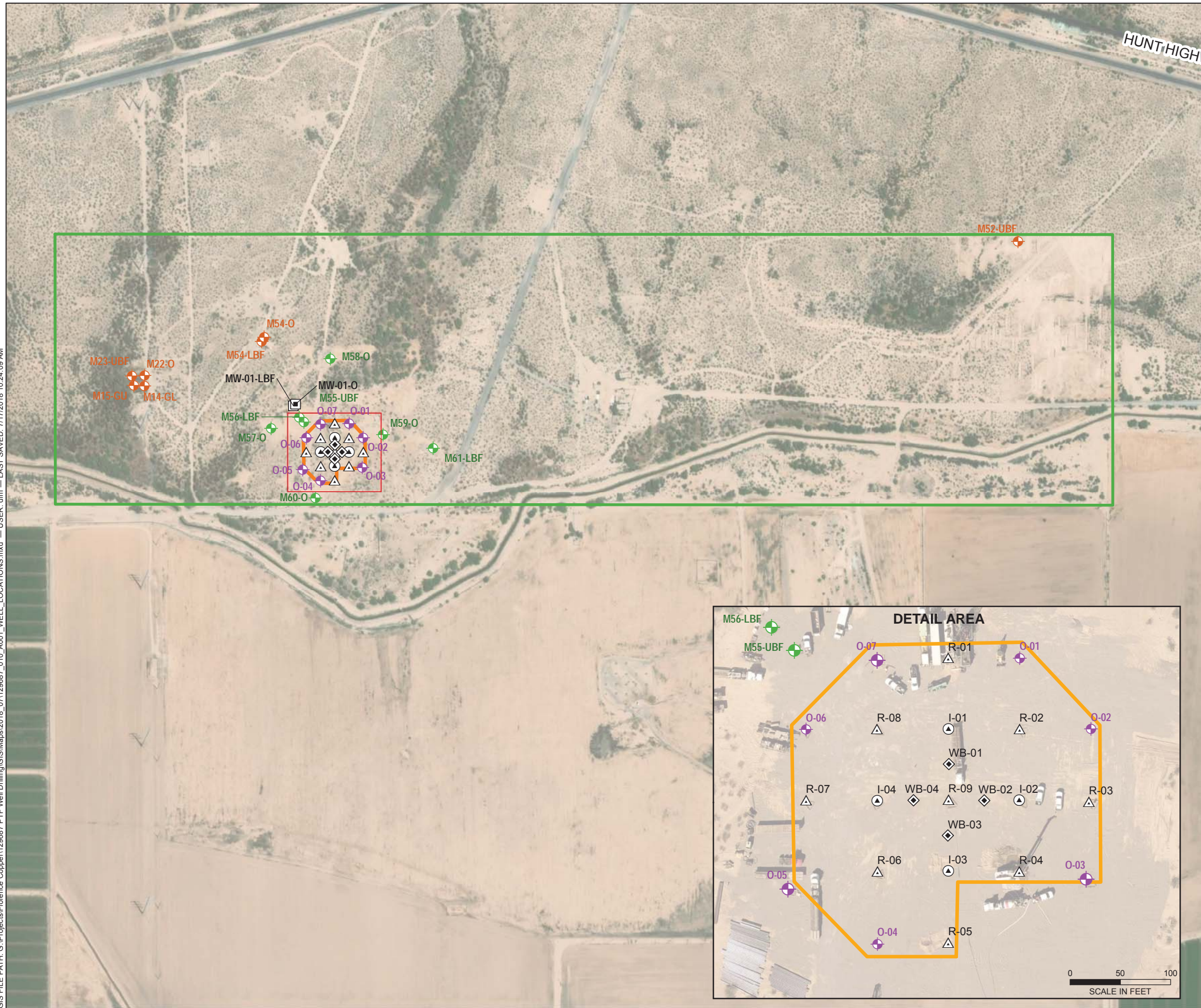
Haley & Aldrich, Inc., 2017. *Well Specification: Drilling, Installation, and Testing of Class III Injection and Recovery Wells, Production Test Facility, Florence, Arizona*. Revised September 2017.

Enclosures:

- Figure 1 – Well Locations
- Figure 2 – Recovery Well Head Detail
- Figure 3 – Geophysical Data and Lithologic Log
- Figure 4 – Well R-02 As-Built Diagram
- Appendix A – Arizona Department of Water Resources Well Registry Report
- Appendix B – Lithologic Log
- Appendix C – Chemical Characteristics of Formation Water
- Appendix D – Well Completion Documentation
- Appendix E – Geophysical Logs
- Appendix F – Cement Bond Log Summary
- Appendix G – SAPT Documentation
- Appendix H – Well Development Field Forms
- Appendix I – Well Video Log and Gyroscopic Survey Reports

FIGURES

GIS FILE PATH: G:\Projects\Florence Copper\129687 PTF Well Drilling\GIS\Maps\2018_07129687_010_A001_WELL_LOCATIONS.mxd — USER: dfm — LAST SAVED: 7/17/2018 10:24:09 AM



LEGEND

- OBSERVATION WELL
- SUPPLEMENTAL MONITORING WELL
- POINT-OF-COMPLIANCE WELL

PTF WELL

- INJECTION
- RECOVERY
- WESTBAY WELL
- OPERATIONAL MONITORING

PTF WELL FIELD

STATE LAND LEASE

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI



0 500 1,000
SCALE IN FEET

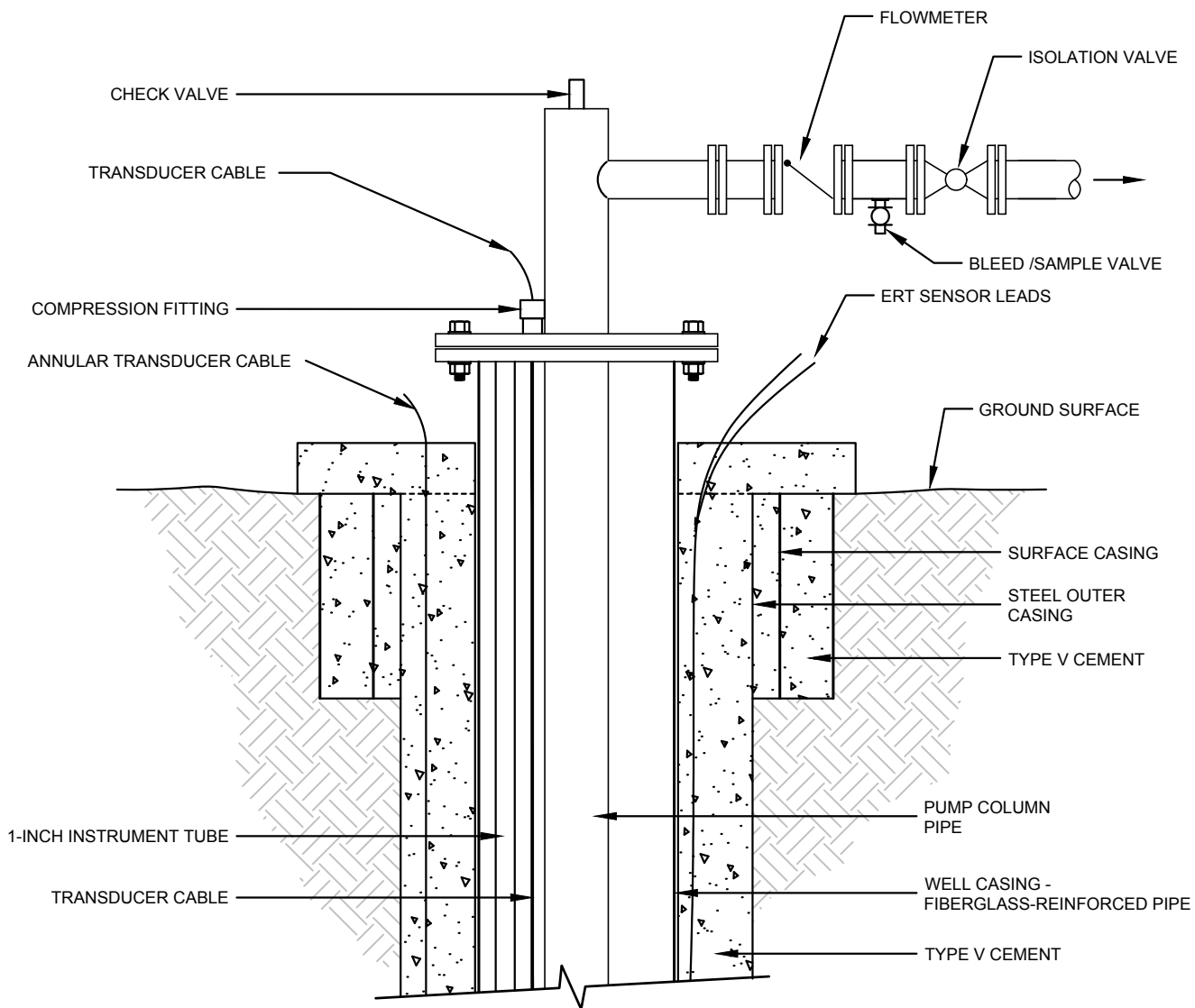
**HALEY
ALDRICH**

FLORENCE COPPER PROJECT
FLORENCE, ARIZONA

WELL LOCATIONS

FLORENCE
COPPER INC. AUGUST 2018

FIGURE 1



NOTES

1. ERT - ELECTRICAL RESISTIVITY TOMOGRAPHY

**HALEY
ALDRICH**

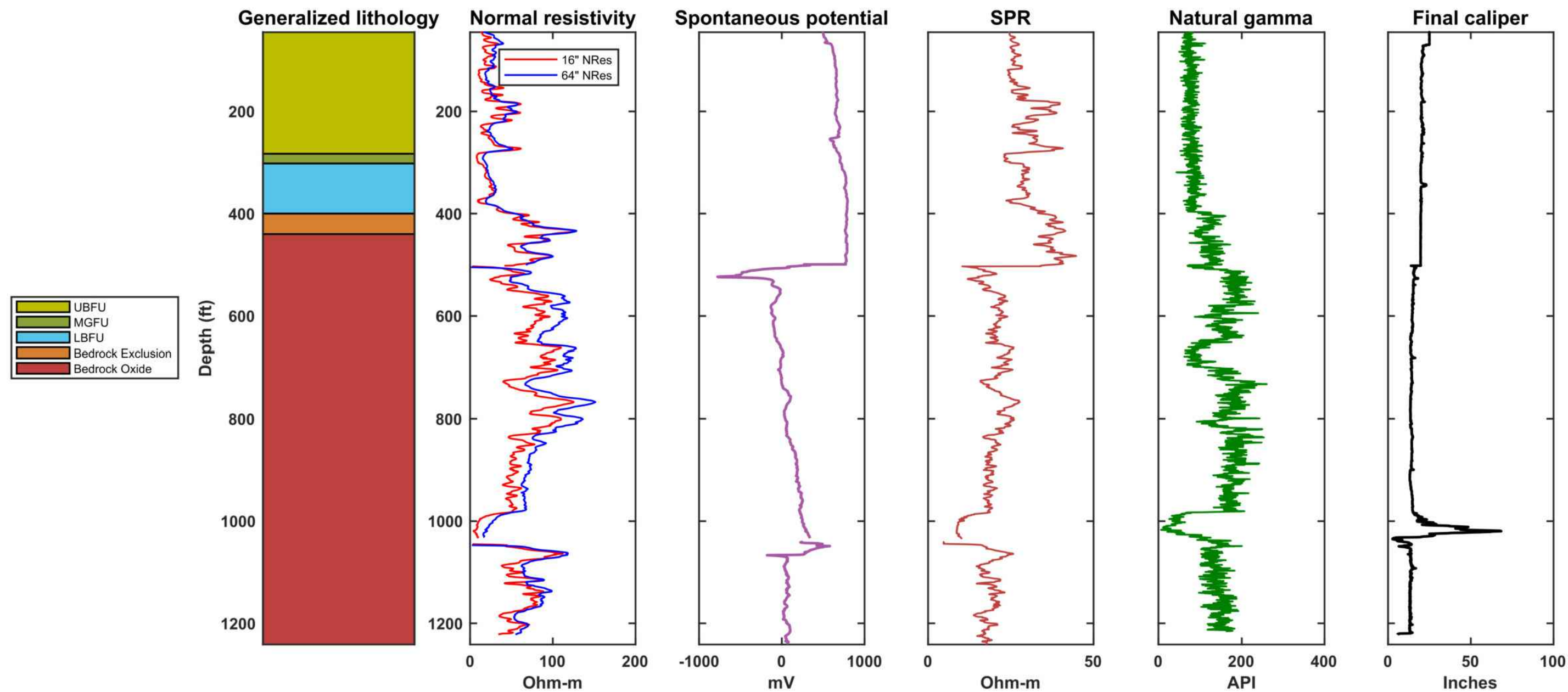
PRODUCTION TEST FACILITY
FLORENCE COPPER, INC.
FLORENCE, ARIZONA

RECOVERY WELL HEAD DETAIL

**FLORENCE
COPPER INC.**

SCALE: NOT TO SCALE
SEPTEMBER 2018

FIGURE 2



HALEY
ALDRICH

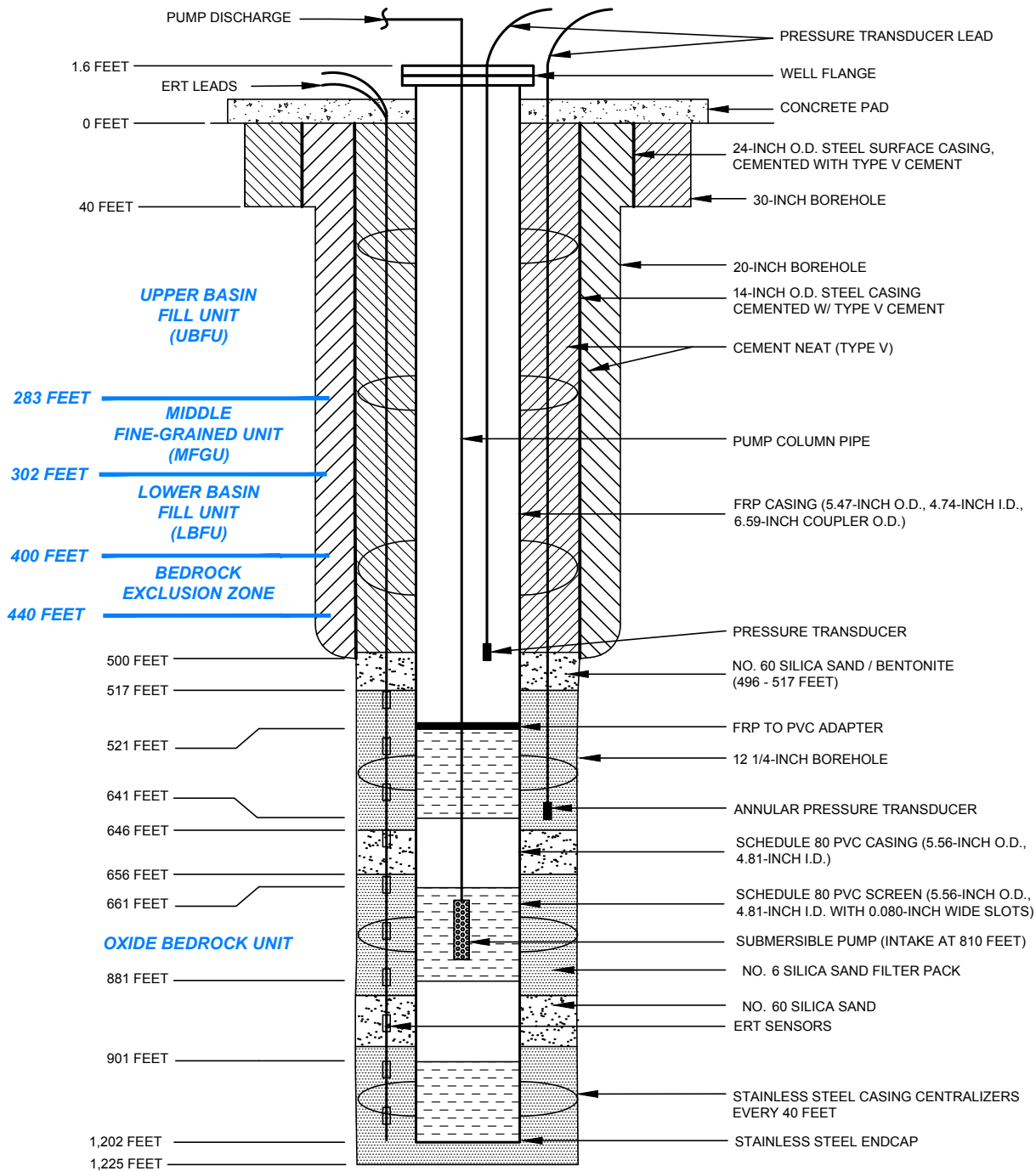
PRODUCTION TEST FACILITY
FLORENCE COPPER, INC.
FLORENCE, ARIZONA

RECOVERY WELL R-02
GEOPHYSICAL DATA AND
LITHOLOGIC LOG

FLORENCE
COPPER

SCALE: AS SHOWN
SEPTEMBER 2018

FIGURE 3



ANNULAR SENSOR DETAILS

- ERT SENSOR DEPTHS - 512, 572, 632, 693, 753, 813, 873, 933, 993, 1053, 1113, 1170
- ANNULAR TRANSDUCER DEPTH - 638 FEET

NOTES

1. WELL REGISTRATION NO.: 55-227701
2. CADASTRAL LOCATION: D(4-9) 28 CAC
3. MEASURING POINT ELEVATION; 1481.81 FEET AMSL
4. I.D. = INSIDE DIAMETER
5. O.D. = OUTSIDE DIAMETER
6. PVC = POLYVINYL CHLORIDE
7. FRP = FIBERGLASS REINFORCED PLASTIC
8. ERT = ELECTRICAL RESISTIVITY TOMOGRAPHY
9. SOUNDING TUBE INSTALLED TO ~ 500 FEET



PRODUCTION TEST FACILITY
 FLORENCE COPPER, INC.
 FLORENCE, ARIZONA

RECOVERY WELL R-02 AS-BUILT DIAGRAM



SCALE: NOT TO SCALE SEPTEMBER
 2018

FIGURE 4

APPENDIX A

Arizona Department of Water Resources Well Registry Report



Arizona Department of Water Resources
Water Management Division
P.O. Box 36020 Phoenix, Arizona 85067-6020
(602) 771-8627 • (602) 771-8690 fax
www.azwater.gov

Well Driller Report
and
Well Log

RECEIVED

CJ

THIS REPORT MUST BE FILED WITHIN **30 DAYS** OF COMPLETING THE WELL.

PLEASE PRINT CLEARLY USING BLACK OR BLUE INK.

ADWR

FILE NUMBER

D (4-9) 28 CAC

WELL REGISTRATION NUMBER

55 - 227701

PERMIT NUMBER (IF ISSUED)

SECTION 1. DRILLING AUTHORIZATION

Drilling Firm

Mail To:

NAME

Hydro Resources Inc.

DWR LICENSE NUMBER

816

ADDRESS

13027 County Rd. 18 Unit C

TELEPHONE NUMBER

(303) 857-7544

CITY / STATE / ZIP

Ft. Lupton, CO 80621

FAX

(303) 857-2826

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL

Florence Copper Inc.

Location of Well

WELL LOCATION ADDRESS (IF ANY)

MAILING ADDRESS

1575 W. Hunt Hwy

TOWNSHIP
(N/S)
4S

RANGE
(E/W)
9E

SECTION
28

160 ACRE
SW ¼

40 ACRE
NE ¼

10 ACRE
SW ¼

CITY / STATE / ZIP CODE

Florence, AZ 85132

LATITUDE
33 °
Degrees

3
Minutes

2.11 "N
Seconds

LONGITUDE
-111 °
Degrees

26
Minutes

3.84 "W
Seconds

CONTACT PERSON NAME AND TITLE

Ian Ream - Sr. Hydrologist

METHOD OF LATITUDE/LONGITUDE (CHECK ONE)

☒ *GPS: Hand-Held ☐ *GPS: Survey-Grade

TELEPHONE NUMBER

(520) 374-3984

FAX

LAND SURFACE ELEVATION AT WELL

1492

Feet Above Sea Level

WELL NAME (e.g., MW-1, PZ-3, Lot 25 Well, Smith Well, etc.)

R - 02

METHOD OF ELEVATION (CHECK ONE)

☒ *GPS: Hand-Held ☐ *GPS: Survey-Grade

*GEOGRAPHIC COORDINATE DATUM (CHECK ONE)

☒ NAD-83 ☐ Other (please specify):

COUNTY

PINAL

ASSESSOR'S PARCEL ID NUMBER

BOOK

MAP

PARCEL

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ALL THAT APPLY

- ☐ Air Rotary
☐ Bored or Augered
☐ Cable Tool
☐ Dual Rotary
☒ Mud Rotary
☒ Reverse Circulation
☐ Driven
☐ Jetted
☐ Air Percussion / Odex Tubing
☐ Other (please specify):

Method of Well Development

CHECK ALL THAT APPLY

- ☒ Airlift
☐ Bail
☐ Surge Block
☒ Surge Pump
☐ Other (please specify):

Method of Sealing at Reduction Points

CHECK ONE

- ☐ None
☐ Packed
☐ Swedged
☐ Welded
☐ Other (please specify):

Condition of Well

CHECK ONE

- ☒ Capped
☐ Pump Installed

Construction Dates

DATE WELL CONSTRUCTION STARTED

01/13/2018

DATE WELL CONSTRUCTION COMPLETED

05/23/2018

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

SIGNATURE OF QUALIFYING PARTY

DATE

5/23/2018

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 227701

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Depth

| | | | | | |
|-----------------|------|-------------------------|-------------------------|------|-------------------------|
| DEPTH OF BORING | 1225 | Feet Below Land Surface | DEPTH OF COMPLETED WELL | 1202 | Feet Below Land Surface |
|-----------------|------|-------------------------|-------------------------|------|-------------------------|

Water Level Information

| | | | | | | | |
|--------------------|-----|-------------------------|---------------|------------|---------------|------|--|
| STATIC WATER LEVEL | 234 | Feet Below Land Surface | DATE MEASURED | 04/11/2018 | TIME MEASURED | 1 PM | IF FLOWING WELL, METHOD OF FLOW REGULATION |
| | | | | | | | <input type="checkbox"/> Valve <input type="checkbox"/> Other: |

| Borehole | | | Installed Casing | | | | | | | | | | | | | |
|--------------------|-----------|----------------------------|--------------------|-----------|-------------------------|---------------------|-----|-----|-------------------------|------------------------|-----------|----------------|-------------|---------|-------------------------|---------------------------|
| DEPTH FROM SURFACE | | BOREHOLE DIAMETER (inches) | DEPTH FROM SURFACE | | OUTER DIAMETER (inches) | MATERIAL TYPE (T) | | | | PERFORATION TYPE (T) | | | | | | SLOT SIZE IF ANY (inches) |
| FROM (feet) | TO (feet) | | FROM (feet) | TO (feet) | | STEEL | PVC | ABS | IF OTHER TYPE, DESCRIBE | BLANK OR NONE | WIRE WRAP | SHUTTER SCREEN | MILLS KNIFE | SLOTTED | IF OTHER TYPE, DESCRIBE | |
| 0 | 40 | 30 | 0 | 40 | 24.5 | X | | | | X | | | | | | |
| 40 | 496 | 20 | 0 | 496 | 14.5 | X | | | | X | | | | | | |
| 496 | 1225 | 12.25 | 0 | 520 | 5.44 | | | | FRP | X | | | | | | |
| | | | 520 | 641 | 5.56 | | X | | | | | | | X | | .080 |
| | | | 641 | 661 | 5.56 | | X | | | X | | | | | | |
| | | | 661 | 881 | 5.56 | | X | | | | | | | X | | .080 |
| | | | 881 | 901 | 5.56 | | X | | | X | | | | | | |
| | | | 901 | 1202 | 5.56 | | X | | | | | | | X | | .080 |
| | | | | | | | | | | | | | | | | |

| Installed Annular Material | | | | | | | | | | | | |
|----------------------------|-----------|-----------------------------|----------|-----------------------------|------------------------|-----------|-------|---------|---|------|--------|------|
| DEPTH FROM SURFACE | | ANNULAR MATERIAL TYPE (T) | | | | | | | FILTER PACK | | | |
| FROM (feet) | TO (feet) | NONE | CONCRETE | NEAT CEMENT OR CEMENT GROUT | CEMENT-BENTONITE GROUT | BENTONITE | | | IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE | SAND | GRAVEL | SIZE |
| | | | | | | GROUT | CHIPS | PELLETS | | | | |
| 0 | 40 | | | X | | | | | | | | |
| 0 | 496 | | | X | | | | | | | | |
| 496 | 517 | | | | | | | X | | | | |
| 517 | 646 | | | | | | | | | X | | 6-9 |
| 646 | 656 | | | | | | | X | | | | |
| 656 | 1225 | | | | | | | | | X | | 6-9 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

Well Driller Report and Well Log

WELL REGISTRATION NUMBER

55 - 227701

SECTION 5. GEOLOGIC LOG OF WELL

[illegible]

Well Driller Report and Well Log

WELL REGISTRATION NUMBER

55 - 227701

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER

Florence Copper Inc.


COUNTY ASSESSOR'S PARCEL ID NUMBER

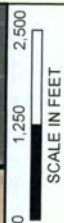
BOOK

MAP

PARCEL

- ❖ Please draw the following: (1) the boundaries of property on which the well was located; (2) the well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- ❖ Please indicate the distance between the well location and any septic tank system or sewer system.

| | | | | | | |
|---------------------------|--|--|--|--|--|---|
| | | | | | |  |
| | | | | | | 1" = ____ ft |
| <h1>SEE ATTACHED MAP</h1> | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |



LEGEND

- OBSERVATION WELL
- SUPPLEMENTAL MONITORING
- POINT-OF-COMPLIANCE WELL

PTF WELL

- INJECTION
- RECOVERY
- WESTBAY WELL
- OPERATIONAL MONITORING

- PTF WELL FIELD
- STATE LAND LEASE

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI



Run Date: 09/06/2017

AZ DEPARTMENT OF WATER RESOURCES

WELL REGISTRY REPORT - WELLS55

| | | | | | | | | | | | | |
|----------|---|-----|-----|----|---|---|---|-------------|-------------|-----|-------|-----|
| Location | D | 4.0 | 9.0 | 28 | C | A | C | Well Reg.No | 55 - 227701 | AMA | PINAL | AMA |
|----------|---|-----|-----|----|---|---|---|-------------|-------------|-----|-------|-----|

| | | | |
|-----------------|--|------------------------|-------------------------------------|
| Registered Name | FLORENCE COPPER INC 1575 W HUNT HWY | File Type | NEW WELLS (INTENTS OR APPLICATIONS) |
| | | Application/Issue Date | 08/21/2017 |
| | FLORENCE | AZ | 85132 |


| | | | |
|-----------------------|--|-----------------------|----------------------------|
| Owner | OWNER | Well Type | NON-EXEMPT |
| Driller No. | 816 | SubBasin | ELOY |
| Driller Name | HYDRO RESOURCES - ROCKY MOUNTAIN, INC. | Watershed | UPPER GILA RIVER |
| Driller Phone | 303-857-7540 | Registered Water Uses | INDUSTRIAL |
| County | PINAL | Registered Well Uses | WATER PRODUCTION |
| | | Discharge Method | NO DISCHARGE METHOD LISTED |
| Intended Capacity GPM | 0.00 | Power | NO POWER CODE LISTED |

| | | | | | |
|------------|------|-------------|------|------------|-----------------------|
| Well Depth | 0.00 | Case Diam | 0.00 | Tested Cap | 0.00 |
| Pump Cap. | 0.00 | Case Depth | 0.00 | CRT | |
| Draw Down | 0.00 | Water Level | 0.00 | Log | |
| | | Acres Irrig | 0.00 | Finish | NO CASING CODE LISTED |

Contamination Site: NO - NOT IN ANY REMEDIAL ACTION SITE

Tribe: Not in a tribal zone

Comments R-02


55-227701

Current Action

| | | |
|--------------------|-----|---------------------------|
| 9/1/2017 | 550 | DRILLING AUTHORITY ISSUED |
| Action Comment: sm | | |

Action History

| | | |
|--------------------|-----|---|
| 9/1/2017 | 555 | DRILLER & OWNER PACKETS MAILED |
| Action Comment: sm | | |
| 8/29/2017 | 867 | APP/NOI HYDRO/WATER QUALITY REVIEW COMPLETE |
| Action Comment: pw | | |
| 8/28/2017 | 866 | APP/NOI SENT TO HYDRO/WATER QUALITY REVIEW |
| Action Comment: sm | | |
| 8/21/2017 | 150 | NOI RECEIVED FOR A NEW PRODUCTION WELL |
| Action Comment: sm | | |

**ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER PERMITTING AND WELLS UNIT
1110 Washington St., Suite 310, Phoenix, AZ 85007-2952**

THIS AUTHORIZATION SHALL BE IN THE POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL R-02

WELL REGISTRATION NO: 55-227701

AUTHORIZED DRILLER: HYDRO RESOURCES

LICENSE NO: 816

A NOTICE OF INTENTION TO DRILL A NON-EXEMPT WELL INSIDE THE PHOENIX ACTIVE MANAGEMENT AREA HAS BEEN GRANTED TO:

WELL OWNER: FLORENCE COOPER, INC. 1575 W HUNT HWY FLORENCE, AZ 85132

The well(s) is/are to be located in the:

SW¼ of the NE¼ of the SW¼ of Section 28, Township 4 South, Range 9 East

No. of well(s) in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 22TH DAY OF AUGUST, 2018.

Stella M. Wells

GROUNDWATER PERMITTING AND WELLS UNIT

**THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING**



DOUGLAS A. DUCEY
Governor



THOMAS BUSCHATZKE
Director

ARIZONA DEPARTMENT of WATER RESOURCES
1110 W. Washington St., Suite 310
Phoenix, Arizona 85007-2952
602.771.8500
azwater.gov

September 1, 2017

Ian Ream
Florence Copper, Inc.
1575 W. Hunt Hwy
Florence, AZ 85132

RE: Notice of Intention to Modify an Existing Non-Exempt Well
Well Registration No. 55-227700 thru 55-227708
File No. D (4-9) 28 CCA & CCD

Dear Mr. Ream:

The Notice of Intention to Modify an Existing Non-Exempt Well inside the Pinal Active Management Area has been approved. A copy of the Notice is enclosed for your records. The drilling card for the modification of the above referenced well has been forwarded to your well driller.

Within 30 days of completion of the well, the well driller is required to furnish this Department with a complete and accurate log of the well. In addition, the well owner is required to submit the enclosed Completion Report within 30 days of installation of pump equipment.

Pursuant to the provisions of A.R.S. § 45-604, any person withdrawing groundwater from a well is required to use a water measuring device to record rates of withdrawal in order to provide or allow the computation of an annual volume of pumpage from the well. The total volume of pumpage shall be reported on an annual report. The annual report shall be submitted no later than March 31 following the end of each completed annual reporting period. The first annual report period shall be from the date of this permit through December 31, 2017.

The Department has issued the authorization to modify this well pursuant to A.R.S. §§ 45-596 and 45-597 of the Groundwater Code. The legal nature of the water withdrawn from the well may be the

Florence Cooper Inc.
September 1, 2017
Re: Notice of Intention to Drill a Non-Exempt Well
Page 2

subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate.

Under A.R.S. § 45-593, the person to whom a well is registered must notify the Department of a change in ownership, physical characteristics or any other data about the well in order to keep the well registration records current and accurate. Forms may be obtained by contacting the Department, or online at <http://www.azwater.gov>

If you have any questions about the terms and conditions of the permit or require any administrative corrections to this permit, please contact the Groundwater Permitting Wells Unit at (602) 771-8527.

Sincerely,

A handwritten signature in blue ink that reads "Stella Murillo". The signature is written in a cursive, flowing style.

Stella Murillo, Manager
Groundwater Permitting and Wells Section

Enclosures

R-02

**ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER PERMITTING AND WELLS UNIT
MAIL TO: P.O. BOX 36020, PHOENIX, ARIZONA 85067-6020
1110 W. Washington St. Suite 310, Phoenix, Arizona 85007-2952
Phone (602) 771-8527 Fax (602) 771-8590**

RECEIVED

AUG 21 2017

ARIZONA DEPARTMENT
OF WATER RESOURCES

**NOTICE OF INTENTION TO DRILL A NON-EXEMPT WELL PURSUANT TO A GROUNDWATER
WITHDRAWAL PERMIT (OTHER THAN A GENERAL INDUSTRIAL USE PERMIT)
IN AN ACTIVE MANAGEMENT AREA**

PLEASE READ GENERAL INSTRUCTIONS AND CONDITIONS ON REVERSE SIDE OF THIS FORM BEFORE COMPLETING.

Section § 45-598, Arizona Revised Statutes provides: In an Active Management Area, prior to drilling a well, a person entitled to withdraw groundwater shall file a Notice of Intention to Drill with the Department. Pursuant to A.R.S. § 45-596 and A.A.C. R12-15-104, the filing fee for this application is \$150.00.

1. WELL/LAND LOCATION:

4S N/S 9E E/W 28
Township Range Section
SW 1/4 NE 1/4 SW 1/4
10 Acre 40 Acre 160 Acre

2. POSITION LOCATION OF THE WELL:

Latitude 33 ° 3 ' 1.39 " N
Longitude 111 ° 26 ' 3.86 " W

3. COUNTY Pinal

4. APPLICANT

Florence Copper, Inc.
Name
1575 W Hunt Hwy
Mailing Address
Florence AZ 85132
City State Zip
Telephone No. 520-374-3984

5. OWNER OF THE LAND OF WELLSITE:

AZ State Land (Mineral Lease #11-026500)
Name
1616 W Adams Street
Mailing Address
Phoenix AZ 85007
City State Zip
Telephone No. 602-542-4631

6. THIS NOTICE IS FILED BY:

Check one: ☐ Owner ☒ Lessee

Ian Ream
Name
1575 W Hunt Hwy
Mailing Address
Florence AZ 85132
City State Zip

7. DESCRIPTION OF THE PROPOSED WELL:

Diameter 5 Inches
Depth 1200 Feet
Type of Casing Steel/FRP/PVC

8. ESTIMATE OF TOTAL ANNUAL PUMPAGE:

48.5 Acre-feet per
Year

9. PRINCIPAL USE OF WATER (be specific):

Mineral Extraction

10. OTHER USES INTENDED (be specific):

None

11. CONSTRUCTION WILL START:

September 2017
Month Year

12. CLAIM OF ENTITLEMENT TO WITHDRAW GROUNDWATER:

Permit 59- 562120.0005

13. DRILLING FIRM:

HydroResources
Name
13027 County Rd 18, Unit C
Mailing Address
Fort Lupton CO 80621
City State Zip
303-857-7540
Telephone No.
816
DWR License Number
A-4
ROC License Category

14. Is the proposed well within 100 feet of a septic tank system, sewage area, landfill, hazardous waste facility or storage area of hazardous material or a petroleum storage area and tank? ☐ Yes ☒ No

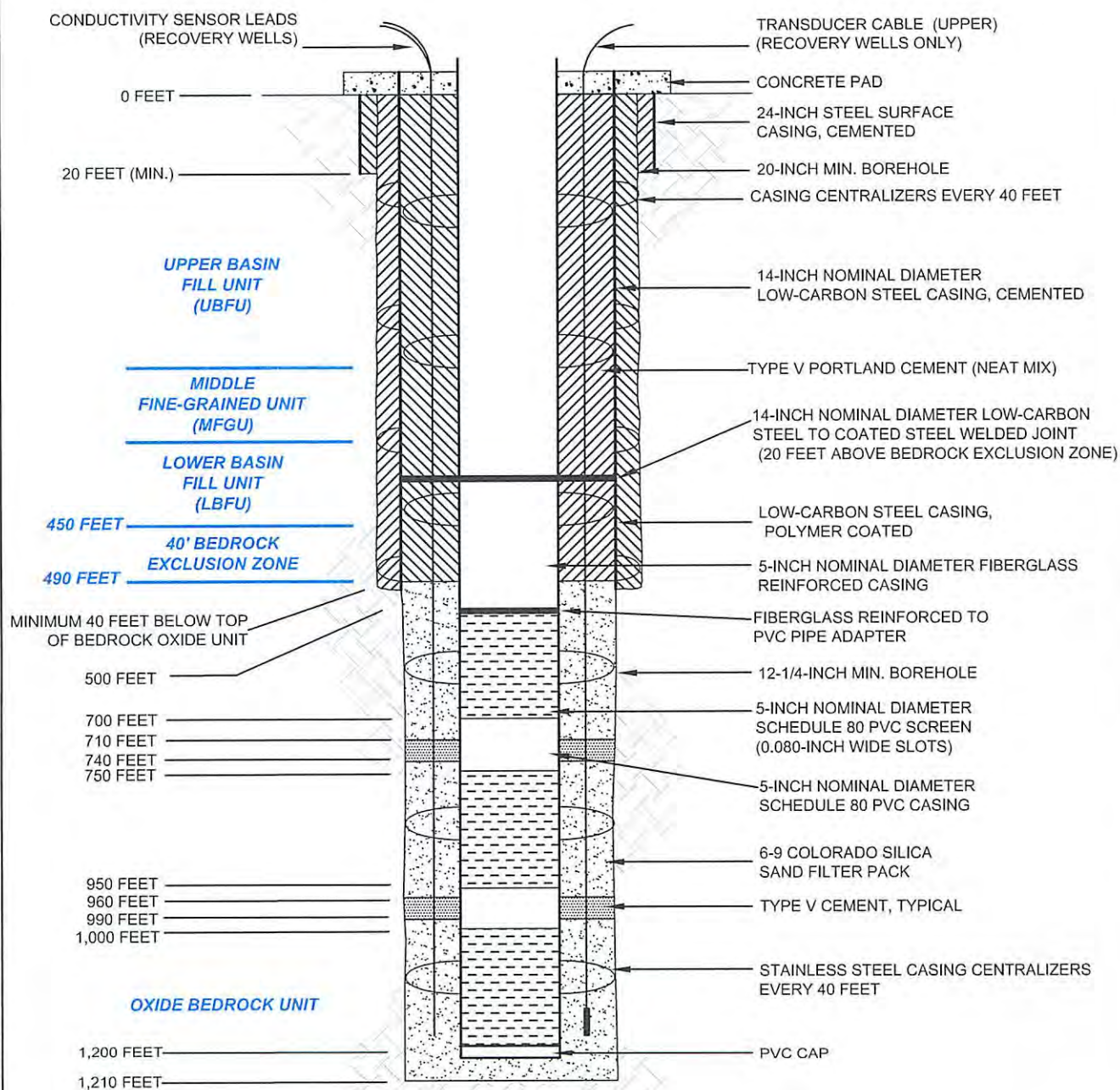
| | |
|-------------------------|-----------------------------|
| FOR DEPARTMENT USE ONLY | |
| File No. | <u>D(4-a)28CAC</u> |
| Filed | <u>8-21-17</u> By <u>sm</u> |
| Input | <u>-</u> By <u>ii</u> |
| DUPLICATE | |
| Mailed | By |
| Registration 55- | <u>227701</u> |
| AMA/INA | <u>DINA</u> |

15. Attach a detailed construction diagram of the proposed well design. The diagram should provide verification of consistency with minimum construction requirements. Specifically, the diagram should include an indication of the perforated interval location(s) in relationship to the expected water level; the depth and thickness of the surface seal, and grouting material used; whether the surface or conductor casing will extend above grade; and vault details, if specified.

I state that this Notice is filed in compliance with Rules A.A.C. R12-15-809 and R12-15-816(F), and is complete and correct to the best of my knowledge and belief, and that I understand the conditions set forth on the reverse side of this form.

Ian Ream DR Senior Hydrogeologist 8-17-17
Type or Print Name and Signature ☐ Land Owner ☒ Lessee of well site Title Date

G:\PROJECTS\CURIS RESOURCES\38706-CURIS FEASIBILITY\DRAWINGS\2014 UIC APP\FIGURES MM-1-1 WELL CONST DGRM JUNE2015 UPDATED.DWG



HALEY
ALDRICH

FLORENCE COPPER, INC.
FLORENCE, ARIZONA

R-02 WELL CONSTRUCTION DIAGRAM

FLORENCE
COPPER INC.

SCALE: NOT TO SCALE

FIGURE 1

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER PERMITTING AND WELLS UNIT

1110 W. Washington St. Suite 310, Phoenix, Arizona 85007-2952

Phone (602) 771-8585 Fax (602) 771-8688

WELL CONSTRUCTION SUPPLEMENT (form DWR 55-90)

Well Registration Number 55- 227701

1. Well Location:

SW $\frac{1}{4}$ of the NE $\frac{1}{4}$ of the SW $\frac{1}{4}$, Sec. 28, Township 4S Range 9E.
10AC 40AC 160AC

2. Position Location of the Well:

Latitude 33 ° 3 ' 1.39 " Longitude 111 ° 26 ' 3.86 "

Datum: ☒ NAD 83 • NAD 27 • Other: _____

3. County PINAL

4. Date construction to start: SEPTEMBER 2017

5. Time period well will remain in use: 5 YEARS

6. Is pump equipment to be installed? YES If so, design pump capacity: 30 GPM.

7. Well construction plan:

a. Drilling method (mud rotary, hollow-stem auger, etc.) MUD ROTARY

b. Borehole diameters 30 inches from 0 feet to 20 feet.
20 inches from 20 feet to 490 feet.
12.25 inches from 490 feet to 1210 feet.

c. Casing materials STEEL/FIBERGLASS REINFORCED PLASTIC/ PVC

d. Method of well development (bail, air lift, surge, etc.) AIRLIFT, SURGE

e. Will surface or conductor casing extend above grade? NO

8. Include a detailed construction diagram of the proposed well design. The diagram should verify consistency with minimum construction requirements specified in the Department's well construction rules found in Arizona Administrative Code (A.A.C.) R12-15-801 et seq. Specifically, the diagram should include borehole diameters; casing materials and diameters; perforation intervals; the expected water level; depth and thickness of the surface seal; proposed grouting materials; and the length that the surface or conductor casing will extend above grade, or vault details, if specified.

Pursuant to Arizona Revised Statutes (A.R.S.) § 45-594.B, all well construction, replacement, deepening and abandonment operations shall comply with the rules adopted pursuant to this section. Therefore, any existing well that is deepened or modified must be brought into compliance with minimum well construction standards specified above, if not already in compliance.

9. Proposed materials and method of abandonment if well is to be abandoned after project is completed (Minimum requirements per A.A.C. R12-15-816):

10. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous material, or petroleum storage area or tank? ____ Yes ☒ No

11. Is this well to monitor existing contamination? ____ Yes ☒ No

Potential contamination? ____ Yes ☒ No If yes, please provide explanation: _____

12. Name of Consulting firm, if any: HALEY & ALDRICH, INC,

400 E VAN BUREN ST. PHOENIX AZ 85004
Address City State Zip

Contact Person: LAUREN CANDREVA Telephone Number: 602-760-2429

13. Drilling firm HYDRORESOURCES

DWR License Number: 816 ROC License Category: A-4

14. Special construction standards, if any, required pursuant to A.A.C. R12-15-821: _____

I (we), Ian Beam hereby affirm that all information provided in this
(print name) application is true and correct to the best of my/our
knowledge and belief.

Signature of Applicant  Date 8-17-17



Memorandum

To: Stella Murillo, Groundwater Permitting and Wells
From: Phil Whitmore, Groundwater Permitting and Wells
CC: Jeff Tannler, Statewide AMA Director
Date: 8/29/2017
Subject: Review of Application for a Permit to Drill or Operate Nine Non-exempt Wells within an Active Management Area
59-562120 55-227700-08 D(4-9)CAC & CBD
Florence Copper, Inc.

ADWR has reviewed the above-referenced applications for nine (9) permits to drill and operate a non-exempt well in the Pinal AMA. This hydrologist review is limited to conformance with well construction standards only.

The applicant proposes to withdraw 48.5 acre-feet per year from 8 of the new wells and 97 acre-feet per year from one well pursuant to the applicant's Mineral Extraction Withdrawal permit (59-562120.0005).

Well Construction

The applicant proposes that all nine (9) wells will be drilled and constructed in the same manner and drill depths. Each well will be 1210 feet deep with three (3) 200-foot screen intervals all open in the bedrock aquifer only. Eight of wells will have 5-inch and one will have 8-inch diameter inner casing constructed with PVC and include elements to reduce chemical corrosion.

The applications each included proposed well construction diagrams indicating that the outer annulus of the wells will be sealed from the surface to 20 feet below land surface and an inner annulus will be sealed to 490 feet below land surface. The estimated contact of the lower basin fill unit and the crystalline bedrock is approximately 490 feet deep.

The well diagrams did not indicate the height of well stick up and the applicant did not include a request for variance. However, if stick up is to be less than 1 foot above land surface a request for variance should be submitted to comply with Arizona Administrative Code R12-15-820.

Conclusion

We recommend issuing a permit to drill and operate all nine (9) non-exempt wells in the proposed location, at the volume and well construction specifications stated in the application.

Arizona Department of Water Resources

1110 West Washington Street, Suite 310

Phoenix AZ 85007

Customer:

LINDA DOMBROWSKI
70 BLANCHARD ROAD
BURLINGTON, MA 01803

Receipt #: 18-53409
Office: MAIN OFFICE
Receipt Date: 08/21/2017
Sale Type: IN_PERSON
Cashier: WRSAM

| Item No. | Function Code | AOBJ | Description | Ref ID | Qty | Unit Price | Ext Price |
|----------------|---------------|---------|--|--------|-----|------------|-----------|
| 67491 | 122221 | 4439-TT | Permit to drill non-exempt well in an active management area | 227701 | 1 | 150.00 | 150.00 |
| RECEIPT TOTAL: | | | | | | | 150.00 |

Payment type: CREDIT CARD

Amount Paid: \$150.00

Payment Received Date: 08/21/2017

Authorization 189991565

Notes: FROM TTA.

APPENDIX B

Lithologic Log

H&A-LITHOLOG-PHOENIX-NO WELL HA-LIB09-PHX GLB LITHOLOGIC REPORT DATATEMPLATE+ GDT \\HALEY\ALDRICH\COMMON\129687\GINT\129687-LITH_KF.GPJ 31 Aug 18

| HALEY ALDRICH | | | | | LITHOLOGIC LOG | | R-02 | |
|--|-----------|-----------------|---------------------------|--|-----------------------------------|------------------------|---|--|
| Project Production Test Facility, Florence, Arizona | | | | | File No. 129687 | | | |
| Client Florence Copper, Inc. | | | | | Sheet No. 1 of 15 | | | |
| Contractor Cascade Drilling LLC | | | | | Cadastral Location D (4-9) 28 CAC | | | |
| Drilling Method | | Reverse Rotary | | Land Surface Elevation 1478.79 feet, amsl | | Start 13 January 2018 | | |
| Borehole Diameter(s) | | 30/20/12.25 in. | | Datum State Plane NAD 83 | | Finish 19 January 2019 | | |
| Rig Make & Model | | Midway 3500 | | Location N 746,202 E 847,765 | | H&A Rep. C. Giusti | | |
| Depth (ft) | Elevation | USCS Symbol | Stratum Change Depth (ft) | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION | | | COMMENTS | |
| 0 | | SM | | SILTY SAND (0-10 feet) Primarily fine to medium sand with ~30% fines and trace gravel to 5 mm. Sand and gravel is subrounded to subangular. Fines are nonplastic, have no toughness, low dry strength and are yellowish red (5YR 4/6). UBFU | | | Well Registry ID: 55-227701 Surface Completion: Bolted Sealed Well Flange Well casing stickup: 1.6 feet als <i>COLOR IDENTIFICATION MADE WITH WET SAMPLES USING MUNSELL CHART</i> | |
| 5 | -1475 | | | | | | | |
| 10 | -1470 | SC | 10 | CLAYEY SAND (10-24 feet) Primarily fine to medium sand with ~30% fines and ~10% gravel to 20 mm. Sand and gravel is subrounded to subangular. Fines have medium plasticity, medium toughness, high dry strength, and are reddish brown (5YR 5/4). UBFU | | | | |
| 15 | -1465 | | | | | | | |
| 20 | -1460 | | | | | | | |
| 25 | -1455 | SW-SM | 24 | WELL GRADED SAND with SILT and GRAVEL (24-30 feet) Primarily fine to coarse sand with ~10% fines and ~25% gravel to 27 mm. Sand is subangular to subrounded and gravel is subangular to rounded. Fines are nonplastic, have no toughness, no dry strength, and are reddish brown (5YR 5/3). UBFU | | | | |
| 30 | -1450 | | | | | | | |
| 35 | -1445 | SM | 30 | SILTY SAND (30-50 feet) Primarily fine to medium sand with ~20% fines and ~10% gravel to 15 mm. Sand is subangular to subrounded and gravel is subangular to rounded. Fines have low plasticity, low toughness, medium dry strength, and are reddish brown (5YR 5/4). UBFU | | | | |
| 40 | -1440 | | | | | | | |
| 45 | -1435 | | | | | | | |
| 50 | -1430 | SC | 50 | CLAYEY SAND with GRAVEL (50-60 feet) Primarily fine sand with ~20% fines and ~15% gravel to 15 mm. Sand is subangular to subrounded and gravel is subangular to rounded. Fines have medium plasticity, medium toughness, high dry strength, are reddish brown (5YR 4/4), and have a weak reaction to HCL. UBFU | | | Surface Casing: 24-inch mild steel; 0 - 40 feet Overburden Casing: 14-inch mild steel; 0 - 496 feet Well Casing: Nominal 5-inch diameter Fiberglass Reinforced; -1.6 - 521 feet Unit Intervals: UBFU: 0 - 283 feet MGFU: 283 - 302 feet LBFU: 302 - 400 feet Oxide Bedrock: 400 - 1225 feet | |
| 55 | -1425 | | | | | | | |
| 60 | -1420 | GW-GC | 60 | WELL GRADED GRAVEL with CLAY (60-80 feet) Primarily gravel to 20 mm with ~25% sand and ~10% fines. Sand and gravel is subangular to subrounded. Fines have low plasticity, low toughness, low dry strength, are light brown (7.5YR 6/4), and have a weak reaction to HCL. UBFU | | | | |
| 65 | -1415 | | | | | | | |
| 70 | -1410 | | | | | | | |
| 75 | -1405 | | | | | | | |
| NOTE: Lithologic descriptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description). | | | | | R-02 | | | |

H:\A-LITHOLOG-Phoenix-NO WELL HA-LIB09-PHX GLB LITHOLOGIC REPORT DATA\TEMPLATE+GDT \\HALEY\ALDRICH.COM\SHAREBOS_COMMON\129687\GINT\129687-LITH_KF.GPJ 31 Aug 18

| <div>HALEYALDRICH</div> <div>LITHOLOGIC LOG</div> | | | | R-02 |
|--|-----------|----------------|---------------------------------|---|
| | | | | File No. 129687 Sheet No. 2 of 15 |
| Depth (ft) | Elevation | USCS Symbol | Stratum Change Depth (ft) | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION |
| 75 | | | | |
| | -1400 | SC | 80 | |
| 80 | | | | CLAYEY SAND with GRAVEL (80-90 feet) Primarily fine sand with ~30% fines and ~15% gravel to 15 mm. Sand is subangular to rounded and gravel is subangular to subrounded. Fines have medium plasticity, medium toughness, medium dry strength, are reddish brown (5YR 5/4), and have a weak reaction to HCL. UBFU |
| | -1395 | | | |
| 85 | | | | |
| | -1390 | GW-GC | 90 | |
| 90 | | | | WELL GRADED GRAVEL with CLAY (90-95 feet) Primarily gravel to 17 mm with ~35% sand and ~5% fines. Sand and gravel are subangular to subrounded. Fines have low plasticity, low toughness, low dry strength, are light brown (7.5YR 6/4), and have a weak reaction to HCL. UBFU |
| | -1385 | | | |
| 95 | | SC | 95 | |
| | | | | CLAYEY SAND with GRAVEL (95-105 feet) Primarily fine to medium sand with ~30% fines and ~15% gravel to 15 mm. Sand is subangular to rounded and gravel is subangular to subrounded. Fines have medium plasticity, low toughness, medium dry strength, are reddish brown (5YR 5/4), and have a weak reaction to HCL. UBFU |
| | -1380 | | | |
| 100 | | | | |
| | -1375 | SW | 105 | |
| 105 | | | | WELL GRADED SAND with GRAVEL (105-115 feet) Primarily course sand with ~5% fines and ~15% gravel to 10 mm. Sand is subangular to rounded and gravel is subangular to subrounded. Fines have low plasticity, low toughness, low dry strength, are brown (7.5YR 5/4), and have a weak reaction to HCL. UBFU |
| | -1370 | | | |
| 110 | | | | |
| | -1365 | SC | 115 | |
| 115 | | | | CLAYEY SAND with GRAVEL (115-185 feet) Primarily fine to coarse sand with ~20% fines and ~10% gravel to 15 mm. Sand is subangular to rounded and gravel is subangular to subrounded. Fines have low plasticity, medium toughness, medium dry strength, are reddish brown (5YR 5/3), and have a strong reaction to HCL. UBFU |
| | -1360 | | | |
| 120 | | | | |
| | -1355 | | | |
| 125 | | | | |
| | -1350 | | | |
| 130 | | | | |
| | -1345 | | | |
| 135 | | | | |
| | -1340 | | | |
| 140 | | | | |
| | -1335 | | | |
| 145 | | | | |
| | -1330 | | | |
| 150 | | | | |
| | -1325 | | | |
| 155 | | | | |
| | -1320 | | | |
| 160 | | | | |
| NOTE: Lithologic descriptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description). | | | | R-02 |

| HALEY ALDRICH | | | | LITHOLOGIC LOG | R-02 File No. 129687 Sheet No. 3 of 15 |
|------------------|-----------|----------------|---------------------------------|--|--|
| Depth (ft) | Elevation | USCS Symbol | Stratum Change Depth (ft) | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION | |
| 1315 | | | | | |
| 165 | | | | | |
| 1310 | | | | | |
| 170 | | | | | |
| 1305 | | | | | |
| 175 | | | | | |
| 1300 | | | | | |
| 180 | | | | | |
| 1295 | | | | | |
| 185 | | SW | 185 | WELL GRADED SAND with GRAVEL (185-235 feet) Primarily fine to course sand with ~ 5% fines and ~25% gavel to 16 mm. Sand and gravel is subangular to subrounded. Fines have low plasticity, low toughness, low dry strength, are brown (7.5YR 5/3), and have a weak reaction to HCL. UBFU | |
| 1290 | | | | | |
| 190 | | | | | |
| 1285 | | | | | |
| 195 | | | | | |
| 1280 | | | | | |
| 200 | | | | | |
| 1275 | | | | | |
| 205 | | | | | |
| 1270 | | | | | |
| 210 | | | | | |
| 1265 | | | | | |
| 215 | | | | | |
| 1260 | | | | | |
| 220 | | | | | |
| 1255 | | | | | |
| 225 | | | | | |
| 1250 | | | | | |
| 230 | | | | | |
| 1245 | | | | | |
| 235 | | SC | 235 | CLAYEY SAND (235-255 feet) Primarily fine sand with ~ ~35% fines and ~10% gravel to 12 mm. Sand is subangular to rounded and gravel is subangular to subrounded. Fines have medium plasticity, medium toughness, high dry strength, are reddish brown (5YR 5/3), and have a weak reaction to HCL. UBFU | |
| 1240 | | | | | |
| 240 | | | | | |
| 1235 | | | | | |
| 245 | | | | | |
| | | | | | |

NOTE: Lithologic descriptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

R-02

H:\A-LITHOLOG-PHOENIX-NO WELL HA-LIB09-PHX GLB LITHOLOGIC REPORT DATA\TEMPLATE+GDT \\HALEY\ALDRICH\COMMON\129687\GINT\129687-LITH_KF.GPJ 31 Aug 18

| Depth (ft) | Elevation | USCS Symbol | Stratum Change Depth (ft) | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION |
|------------|-----------|-------------|---------------------------|---|
| -1230 | | | | |
| -250 | | | | |
| -1225 | | | | |
| -255 | | SW | 255 | WELL GRADED SAND with GRAVEL (255-280 feet) Primarily fine to coarse sand with ~ 5% fines and ~20% gravel to 18mm. Sand is angular to rounded and gravel is subangular to subrounded. Fines have low plasticity, low toughness, medium dry strength, are brown (7.5YR 4/3), and have a weak reaction to HCL. UBFU |
| -1220 | | | | |
| -260 | | | | |
| -1215 | | | | |
| -265 | | | | |
| -1210 | | | | |
| -270 | | | | |
| -1205 | | | | |
| -275 | | | | |
| -1200 | | | | |
| -280 | | SC | 280 | CLAYEY SAND (280-283 feet) Approximately equal parts sand and fines with trace gravel to 5 mm. Sand is subangular to rounded and gravel is subangular to subrounded. Fines have medium plasticity, medium toughness, medium dry strength, and are reddish brown (5YR 5/4). MFGU |
| -1195 | | CH | 283 | FAT CLAY (283-302 feet) Primarily fines with ~ 15% sand to 4 mm and no gravel. Sand is subangular. Fines have high plasticity, high toughness, high dry strength, and are light brown (7.5YR 6/4). MFGU |
| -285 | | | | |
| -1190 | | | | |
| -290 | | | | |
| -1185 | | | | |
| -295 | | | | |
| -1180 | | | | |
| -300 | | | | |
| -1175 | | SC | 302 | CLAYEY SAND with GRAVEL (302-400 feet) Primarily fine to coarse sand with ~ 25% fines and ~ 15% gravel to 11 mm. Sand is subangular to rounded and gravel is subangular to subrounded. Fines have low plasticity, low toughness, medium dry strength, and are reddish brown (5YR 5/4). LBFU |
| -305 | | | | |
| -1170 | | | | |
| -310 | | | | |
| -1165 | | | | |
| -315 | | | | |
| -1160 | | | | |
| -320 | | | | |
| -1155 | | | | |
| -325 | | | | |
| -1150 | | | | |
| -330 | | | | |
| -1145 | | | | |
| -335 | | | | |

NOTE: Lithologic descriptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

| Depth (ft) | Elevation | USCS Symbol | Stratum Change Depth (ft) | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION |
|--|-----------|----------------|---------------------------------|--|
| 1140 | -340 | | | |
| 1135 | -345 | | | |
| 1130 | -350 | | | |
| 1125 | -355 | | | |
| 1120 | -360 | | | |
| 1115 | -365 | | | |
| 1110 | -370 | | | |
| 1105 | -375 | | | |
| 1100 | -380 | | | |
| 1095 | -385 | | | |
| 1090 | -390 | | | |
| 1085 | -395 | | | |
| 1080 | -400 | | 400 | QUARTZ MONZONITE (400-540 feet) Consists of quartz at approximately 35%, potassium feldspars at approximately 35%, plagioclase at approximately 25%, and biotite at approximately 5%. Cu minerals present 420 - 500, 505 - 520, 525 - 540 feet. |
| 1075 | -405 | | | |
| 1070 | -410 | | | |
| 1065 | -415 | | | |
| 1060 | -420 | | 422 | |
| NOTE: Lithologic descriptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description). | | | | R-02 |

| Depth (ft) | Elevation | USCS Symbol | Stratum Change Depth (ft) | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION |
|---|-----------|----------------|---------------------------------|--|
| 1055 425 1050 430 1045 435 1040 440 1035 445 1030 450 1025 455 1020 460 1015 465 1010 470 1005 475 1000 480 995 485 990 490 985 495 980 500 975 505 970 | | | | <u>QUARTZ MONZONITE (400-540 feet)</u> Continued |

NOTE: Lithologic descriptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

| Depth (ft) | Elevation | USCS Symbol | Stratum Change Depth (ft) | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION | |
|------------|-----------|-------------|---------------------------|--|--|
| 510 | | | 509 | <u>QUARTZ MONZONITE (400-540 feet)</u> Continued | Filter Pack: No. 60 Silica Sand 517 - 646, 656 - 1225 feet Fine Sand Intervals: 496 - 517, 646 - 656 feet Thread Adapter: Stainless Steel, SCH 80 F480 PVC to API; 521 feet Well Screen: Nominal 5-inch diameter, SCH 80 PVC Screen (0.080-inch slots); 521 - 641, 661 - 881, 901 - 1202 feet ERT Sensor Depths: 512, 572, 632, 693, 753, 813, 873, 933, 993, 1053, 1113, 1170 feet |
| 965 | | | | | |
| 515 | | | | | |
| 960 | | | | | |
| 520 | | | | | |
| 955 | | | | | |
| 525 | | | | | |
| 950 | | | | | |
| 530 | | | | | |
| 945 | | | | | |
| 535 | | | | | |
| 940 | | | 540 | <u>GRANODIORITE (540-565 feet)</u> Contains mostly plagioclase in a gray aphanitic matrix with biotite crystals composing approximately 10%. Cu minerals present throughout. | |
| 540 | | | | | |
| 935 | | | | | |
| 545 | | | | | |
| 930 | | | | | |
| 550 | | | | | |
| 925 | | | | | |
| 555 | | | | | |
| 920 | | | | | |
| 560 | | | | | |
| 915 | | | 565 | <u>QUARTZ MONZONITE (565-595 feet)</u> Consists of quartz at approximately 35%, potassium feldspars at approximately 35%, plagioclase at approximately 25%, and biotite at approximately 5%. Cu minerals present 565 - 580 feet. | |
| 565 | | | | | |
| 910 | | | | | |
| 570 | | | | | |
| 905 | | | | | |
| 575 | | | | | |
| 900 | | | | | |
| 580 | | | | | |
| 895 | | | | | |
| 585 | | | | | |
| 890 | | | | | |
| 590 | | | | | |
| 885 | | | | | |
| 595 | | | 595 | | |

NOTE: Lithologic descriptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

| Depth (ft) | Elevation | USCS Symbol | Stratum Change Depth (ft) | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION |
|------------|-----------|----------------|---------------------------------|--|
| 600 | 880 | | 600 | GRANODIORITE (595-600 feet) Contains mostly plagioclase in a gray aphanitic matrix with biotite crystals composing approximately 10%. |
| 605 | 875 | | | QUARTZ MONZONITE (600-665 feet) Consists of quartz at approximately 35%, potassium feldspars at approximately 35%, plagioclase at approximately 25%, and biotite at approximately 5%. Cu minerals present 610 - 640 feet. |
| 610 | 870 | | | |
| 615 | 865 | | | |
| 620 | 860 | | | |
| 625 | 855 | | | |
| 630 | 850 | | | |
| 635 | 845 | | | |
| 640 | 840 | | | |
| 645 | 835 | | | |
| 650 | 830 | | | |
| 655 | 825 | | | |
| 660 | 820 | | | |
| 665 | 815 | | 665 | GRANODIORITE (665-695 feet) Contains mostly plagioclase in a gray aphanitic matrix with biotite crystals composing approximately 10%. |
| 670 | 810 | | | |
| 675 | 805 | | | |
| 680 | 800 | | | |

NOTE: Lithologic descriptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

| Depth (ft) | Elevation | USCS Symbol | Stratum Change Depth (ft) | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION |
|------------|-----------|----------------|---------------------------------|--|
| 795 | | | | |
| 685 | | | | |
| 790 | | | | |
| 690 | | | | |
| 785 | | | | |
| 695 | | | 695 | QUARTZ MONZONITE (695-980 feet) Consists of quartz at approximately 35%, potassium feldspars at approximately 35%, plagioclase at approximately 25%, and biotite at approximately 5%. Cu minerals present 855 - 875 feet. |
| 780 | | | | |
| 700 | | | | |
| 775 | | | | |
| 705 | | | | |
| 770 | | | | |
| 710 | | | | |
| 765 | | | | |
| 715 | | | | |
| 760 | | | | |
| 720 | | | | |
| 755 | | | | |
| 725 | | | | |
| 750 | | | | |
| 730 | | | | |
| 745 | | | | |
| 735 | | | | |
| 740 | | | | |
| 735 | | | | |
| 745 | | | | |
| 730 | | | | |
| 750 | | | | |
| 725 | | | | |
| 755 | | | | |
| 720 | | | | |
| 760 | | | | |
| 715 | | | | |
| 765 | | | | |
| 710 | | | 769 | |

NOTE: Lithologic descriptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

| Depth (ft) | Elevation | USCS Symbol | Stratum Change Depth (ft) | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION |
|------------|-----------|----------------|---------------------------------|--|
| 770 | | | | <u>QUARTZ MONZONITE (695-980 feet)</u> Continued |
| 705 | | | | |
| 775 | | | | |
| 700 | | | | |
| 780 | | | | |
| 695 | | | | |
| 785 | | | | |
| 690 | | | | |
| 790 | | | | |
| 685 | | | | |
| 795 | | | | |
| 680 | | | | |
| 800 | | | | |
| 675 | | | | |
| 805 | | | | |
| 670 | | | | |
| 810 | | | | |
| 665 | | | | |
| 815 | | | | |
| 660 | | | | |
| 820 | | | | |
| 655 | | | | |
| 825 | | | | |
| 650 | | | | |
| 830 | | | | |
| 645 | | | | |
| 835 | | | | |
| 640 | | | | |
| 840 | | | | |
| 635 | | | | |
| 845 | | | | |
| 630 | | | | |
| 850 | | | | |
| 625 | | | | |
| 855 | | | | |

856

NOTE: Lithologic descriptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

R-02

| Depth (ft) | Elevation | USCS Symbol | Stratum Change Depth (ft) | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION | |
|--|-----------|----------------|---------------------------------|--|------|
| | | | | <u>QUARTZ MONZONITE (695-980 feet)</u> Continued | |
| 620 | | | | | |
| 860 | | | | | |
| 615 | | | | | |
| 865 | | | | | |
| 610 | | | | | |
| 870 | | | | | |
| 605 | | | | | |
| 875 | | | | | |
| 600 | | | | | |
| 880 | | | | | |
| 595 | | | | | |
| 885 | | | | | |
| 590 | | | | | |
| 890 | | | | | |
| 585 | | | | | |
| 895 | | | | | |
| 580 | | | | | |
| 900 | | | | | |
| 575 | | | | | |
| 905 | | | | | |
| 570 | | | | | |
| 910 | | | | | |
| 565 | | | | | |
| 915 | | | | | |
| 560 | | | | | |
| 920 | | | | | |
| 555 | | | | | |
| 925 | | | | | |
| 550 | | | | | |
| 930 | | | | | |
| 545 | | | | | |
| 935 | | | | | |
| 540 | | | | | |
| 940 | | | | | |
| 943 | | | | | |
| NOTE: Lithologic descriptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description). | | | | | R-02 |

| Depth (ft) | Elevation | USCS Symbol | Stratum Change Depth (ft) | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION |
|------------|-----------|----------------|---------------------------------|---|
| 535 | 945 | | | <u>QUARTZ MONZONITE (695-980 feet)</u> Continued |
| 530 | 950 | | | |
| 525 | 955 | | | |
| 520 | 960 | | | |
| 515 | 965 | | | |
| 510 | 970 | | | |
| 505 | 975 | | | |
| 500 | 980 | | 980 | <u>DIABASE (980-985 feet)</u> Dark gray to black igneous rock. |
| 495 | 985 | | 985 | <u>QUARTZ MONZONITE (985-1180 feet)</u> Consists of quartz at approximately 35%, potassium feldspars at approximately 35%, plagioclase at approximately 25%, and biotite at approximately 5%. |
| 490 | 990 | | | |
| 485 | 995 | | | |
| 480 | 1000 | | | |
| 475 | 1005 | | | |
| 470 | 1010 | | | |
| 465 | 1015 | | | |
| 460 | 1020 | | | |
| 455 | 1025 | | | |
| 450 | | | | |

NOTE: Lithologic descriptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

| Depth (ft) | Elevation | USCS Symbol | Stratum Change Depth (ft) | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION |
|------------|-----------|----------------|---------------------------------|---|
| 1030 | | | 1030 | <u>QUARTZ MONZONITE (985-1180 feet)</u> Continued |
| 445 | | | | |
| 1035 | | | | |
| 440 | | | | |
| 1040 | | | | |
| 435 | | | | |
| 1045 | | | | |
| 430 | | | | |
| 1050 | | | | |
| 425 | | | | |
| 1055 | | | | |
| 420 | | | | |
| 1060 | | | | |
| 415 | | | | |
| 1065 | | | | |
| 410 | | | | |
| 1070 | | | | |
| 405 | | | | |
| 1075 | | | | |
| 400 | | | | |
| 1080 | | | | |
| 395 | | | | |
| 1085 | | | | |
| 390 | | | | |
| 1090 | | | | |
| 385 | | | | |
| 1095 | | | | |
| 380 | | | | |
| 1100 | | | | |
| 375 | | | | |
| 1105 | | | | |
| 370 | | | | |
| 1110 | | | | |
| 365 | | | | |
| 1115 | | | | |

NOTE: Lithologic descriptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

| HALEY ALDRICH | | | | LITHOLOGIC LOG | R-02 File No. 129687 Sheet No. 14 of 15 |
|------------------|-----------|----------------|---------------------------------|--|---|
| Depth (ft) | Elevation | USCS Symbol | Stratum Change Depth (ft) | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION | |
| 360 | | | 1117 | <u>QUARTZ MONZONITE (985-1180 feet)</u> Continued | |
| 355 | | | | | |
| 350 | | | | | |
| 345 | | | | | |
| 340 | | | | | |
| 335 | | | | | |
| 330 | | | | | |
| 325 | | | | | |
| 320 | | | | | |
| 315 | | | | | |
| 310 | | | | | |
| 305 | | | | | |
| 300 | | | | | |
| 295 | | | 1180 | <u>GRANODIORITE (1180-1225 feet)</u> Contains mostly plagioclase in a gray aphanitic matrix with biotite crystals composing approximately 10%. | |
| 290 | | | | | |
| 285 | | | | | |
| 280 | | | | | |
| 275 | | | | | |
| 270 | | | | | |
| 265 | | | | | |
| 260 | | | | | |
| 255 | | | | | |
| 250 | | | | | |
| 245 | | | | | |
| 240 | | | | | |
| 235 | | | | | |
| 230 | | | | | |
| 225 | | | | | |
| 220 | | | | | |
| 215 | | | | | |
| 210 | | | | | |
| 205 | | | | | |
| 200 | | | | | |
| 195 | | | | | |
| 190 | | | | | |
| 185 | | | | | |
| 180 | | | | | |
| 175 | | | | | |
| 170 | | | | | |
| 165 | | | | | |
| 160 | | | | | |
| 155 | | | | | |
| 150 | | | | | |
| 145 | | | | | |
| 140 | | | | | |
| 135 | | | | | |
| 130 | | | | | |
| 125 | | | | | |
| 120 | | | | | |
| 115 | | | | | |
| 110 | | | | | |
| 105 | | | | | |
| 100 | | | | | |
| 95 | | | | | |
| 90 | | | | | |
| 85 | | | | | |
| 80 | | | | | |
| 75 | | | | | |
| 70 | | | | | |
| 65 | | | | | |
| 60 | | | | | |
| 55 | | | | | |
| 50 | | | | | |
| 45 | | | | | |
| 40 | | | | | |
| 35 | | | | | |
| 30 | | | | | |
| 25 | | | | | |
| 20 | | | | | |
| 15 | | | | | |
| 10 | | | | | |
| 5 | | | | | |
| 0 | | | | | |

NOTE: Lithologic descriptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

R-02

| Depth (ft) | Elevation | USCS Symbol | Stratum Change Depth (ft) | VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION | |
|--|-----------|----------------|---------------------------------|--|---|
| 1205 | 275 | | 1204 | <u>GRANODIORITE</u> (1180-1225 feet) Continued | |
| 1210 | 270 | | | | |
| 1215 | 265 | | | | |
| 1220 | 260 | | | | |
| 1225 | 255 | | 1225 | | Total Borehole Depth: Driller = 1225 feet; Geophysical Logging = 1215 feet |
| NOTE: Lithologic descriptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description). | | | | | R-02 |

APPENDIX C

Chemical Characteristics of Formation Water



May 23, 2018

Barbara Sylvester
Brown & Caldwell
201 E. Washington Suite 500
Phoenix, AZ 85004

TEL (602) 567-3894
FAX -

Work Order No.: 18D0619
Order Name: Florence Copper

RE: PTF

Dear Barbara Sylvester,

Turner Laboratories, Inc. received 2 sample(s) on 04/25/2018 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Kevin Brim
Project Manager

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

Order: Florence Copper

Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Matrix | Collection Date/Time |
|---------------|------------------|--------------|----------------------|
| 18D0619-01 | R-09 | Ground Water | 04/23/2018 1555 |
| 18D0619-02 | TB | Ground Water | 04/25/2018 0000 |

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

Case Narrative

The 8015D analysis was performed by TestAmerica Laboratories, Inc. in Phoenix, AZ.

The radiochemistry analysis was performed by Radiation Safety Engineering, Inc. in Chandler, AZ.

D5 Minimum Reporting Limit (MRL) is adjusted due to sample dilution; analyte was non-detect in the sample.

H5 This test is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.

M3 The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The associated LCS/LCSD recovery was acceptable.

All soil, sludge, and solid matrix determinations are reported on a wet weight basis unless otherwise noted.

ND Not Detected at or above the PQL

PQL Practical Quantitation Limit

DF Dilution Factor

PRL Project Reporting Limit

| | | | |
|----------------|------------------|-----------------------|-----------------|
| Client: | Brown & Caldwell | Client Sample ID: | R-09 |
| Project: | PTF | Collection Date/Time: | 04/23/2018 1555 |
| Work Order: | 18D0619 | Matrix: | Ground Water |
| Lab Sample ID: | 18D0619-01 | Order Name: | Florence Copper |

| Analyses | Result | PRL | PQL | Qual | Units | DF | Prep Date | Analysis Date | Analyst |
|---------------------------------------|--------|-----|---------|------|-------|----|-----------------|-----------------|---------|
| ICP Dissolved Metals-E 200.7 (4.4) | | | | | | | | | |
| Calcium | 140 | | 4.0 | M3 | mg/L | 1 | 04/27/2018 1440 | 05/04/2018 1150 | MH |
| Iron | ND | | 0.30 | | mg/L | 1 | 04/27/2018 1440 | 05/04/2018 1150 | MH |
| Magnesium | 27 | | 3.0 | | mg/L | 1 | 04/27/2018 1440 | 05/04/2018 1150 | MH |
| Potassium | 6.8 | | 5.0 | | mg/L | 1 | 04/27/2018 1440 | 05/04/2018 1150 | MH |
| Sodium | 170 | | 5.0 | M3 | mg/L | 1 | 04/27/2018 1440 | 05/04/2018 1150 | MH |
| ICP/MS Dissolved Metals-E 200.8 (5.4) | | | | | | | | | |
| Aluminum | ND | | 0.0800 | D5 | mg/L | 2 | 04/27/2018 1440 | 05/07/2018 1139 | MH |
| Antimony | ND | | 0.00050 | | mg/L | 1 | 04/27/2018 1440 | 05/07/2018 1133 | MH |
| Arsenic | 0.0016 | | 0.00050 | | mg/L | 1 | 04/27/2018 1440 | 05/07/2018 1133 | MH |
| Barium | 0.071 | | 0.00050 | | mg/L | 1 | 04/27/2018 1440 | 05/07/2018 1133 | MH |
| Beryllium | ND | | 0.00050 | D5 | mg/L | 2 | 04/27/2018 1440 | 05/07/2018 1139 | MH |
| Cadmium | ND | | 0.00025 | | mg/L | 1 | 04/27/2018 1440 | 05/07/2018 1133 | MH |
| Chromium | 0.0051 | | 0.00050 | | mg/L | 1 | 04/27/2018 1440 | 05/07/2018 1133 | MH |
| Cobalt | ND | | 0.00025 | | mg/L | 1 | 04/27/2018 1440 | 05/07/2018 1133 | MH |
| Copper | 0.011 | | 0.00050 | | mg/L | 1 | 04/27/2018 1440 | 05/07/2018 1133 | MH |
| Lead | ND | | 0.00050 | | mg/L | 1 | 04/27/2018 1440 | 05/07/2018 1133 | MH |
| Manganese | 0.0020 | | 0.00025 | | mg/L | 1 | 04/27/2018 1440 | 05/07/2018 1133 | MH |
| Nickel | 0.0033 | | 0.00050 | | mg/L | 1 | 04/27/2018 1440 | 05/07/2018 1133 | MH |
| Selenium | ND | | 0.0025 | | mg/L | 1 | 04/27/2018 1440 | 05/07/2018 1133 | MH |
| Thallium | ND | | 0.00050 | | mg/L | 1 | 04/27/2018 1440 | 05/07/2018 1133 | MH |
| Zinc | ND | | 0.040 | | mg/L | 1 | 04/27/2018 1440 | 05/07/2018 1133 | MH |
| CVAA Dissolved Mercury-E 245.1 | | | | | | | | | |
| Mercury | ND | | 0.0010 | | mg/L | 1 | 04/26/2018 0955 | 04/26/2018 1639 | MH |
| pH-E150.1 | | | | | | | | | |
| pH (pH Units) | 7.8 | | | H5 | - | 1 | 04/26/2018 1615 | 04/26/2018 1616 | AP |
| Temperature (°C) | 22 | | | H5 | - | 1 | 04/26/2018 1615 | 04/26/2018 1616 | AP |
| ICP/MS Total Metals-E200.8 (5.4) | | | | | | | | | |
| Uranium | 0.016 | | 0.00050 | | mg/L | 1 | 04/27/2018 1230 | 04/30/2018 1348 | MH |

Client: Brown & Caldwell

Project: PTF

Work Order: 18D0619

Lab Sample ID: 18D0619-01

Client Sample ID: R-09

Collection Date/Time: 04/23/2018 1555

Matrix: Ground Water

Order Name: Florence Copper

| Analyses | Result | PRL | PQL | Qual | Units | DF | Prep Date | Analysis Date | Analyst |
|---|--------|--------|------|------|----------|----|-----------------|-----------------|---------|
| Anions by Ion Chromatography-E300.0 (2.1) | | | | | | | | | |
| Chloride | 310 | | 25 | | mg/L | 25 | 04/26/2018 1225 | 04/26/2018 1415 | AP |
| Fluoride | ND | | 0.50 | | mg/L | 1 | 04/25/2018 1208 | 04/25/2018 1544 | AP |
| Nitrogen, Nitrate (As N) | 8.8 | | 0.50 | | mg/L | 1 | 04/25/2018 1208 | 04/25/2018 1544 | AP |
| Nitrogen, Nitrite (As N) | ND | | 0.10 | | mg/L | 1 | 04/25/2018 1208 | 04/25/2018 1544 | AP |
| Sulfate | 190 | | 130 | | mg/L | 25 | 04/26/2018 1225 | 04/26/2018 1415 | AP |
| Cyanide-E335.4 | | | | | | | | | |
| Cyanide | ND | | 0.10 | | mg/L | 1 | 04/26/2018 0845 | 04/30/2018 1545 | AP |
| Alkalinity-SM2320B | | | | | | | | | |
| Alkalinity, Bicarbonate (As CaCO3) | 150 | | 2.0 | | mg/L | 1 | 05/03/2018 1030 | 05/03/2018 1210 | EJ |
| Alkalinity, Carbonate (As CaCO3) | ND | | 2.0 | | mg/L | 1 | 05/03/2018 1030 | 05/03/2018 1210 | EJ |
| Alkalinity, Hydroxide (As CaCO3) | ND | | 2.0 | | mg/L | 1 | 05/03/2018 1030 | 05/03/2018 1210 | EJ |
| Alkalinity, Phenolphthalein (As CaCO3) | ND | | 2.0 | | mg/L | 1 | 05/03/2018 1030 | 05/03/2018 1210 | EJ |
| Alkalinity, Total (As CaCO3) | 150 | | 2.0 | | mg/L | 1 | 05/03/2018 1030 | 05/03/2018 1210 | EJ |
| Specific Conductance-SM2510 B | | | | | | | | | |
| Conductivity | 1700 | | 0.20 | | µmhos/cm | 2 | 05/09/2018 1315 | 05/09/2018 1330 | AP |
| Total Dissolved Solids (Residue, Filterable)-SM2540 C | | | | | | | | | |
| Total Dissolved Solids (Residue, Filterable) | 1000 | | 20 | | mg/L | 1 | 04/26/2018 0826 | 05/01/2018 1600 | EJ |
| Volatile Organic Compounds by GC/MS-SW8260B | | | | | | | | | |
| Benzene | ND | | 0.50 | | ug/L | 1 | 05/07/2018 1824 | 05/07/2018 1943 | KP |
| Carbon disulfide | ND | | 2.0 | | ug/L | 1 | 05/07/2018 1824 | 05/07/2018 1943 | KP |
| Ethylbenzene | ND | | 0.50 | | ug/L | 1 | 05/07/2018 1824 | 05/07/2018 1943 | KP |
| Toluene | ND | | 0.50 | | ug/L | 1 | 05/07/2018 1824 | 05/07/2018 1943 | KP |
| Xylenes, Total | ND | | 1.5 | | ug/L | 1 | 05/07/2018 1824 | 05/07/2018 1943 | KP |
| Surr: 4-Bromofluorobenzene | 95 | 70-130 | | | %REC | 1 | 05/07/2018 1824 | 05/07/2018 1943 | KP |
| Surr: Dibromofluoromethane | 101 | 70-130 | | | %REC | 1 | 05/07/2018 1824 | 05/07/2018 1943 | KP |
| Surr: Toluene-d8 | 77 | 70-130 | | | %REC | 1 | 05/07/2018 1824 | 05/07/2018 1943 | KP |

Client:

Project:

Work Order:

Lab Sample ID:

Brown & Caldwell
PTF
18D0619
18D0619-02

Client Sample ID: TB

Collection Date/Time: 04/25/2018 0000

Matrix: Ground Water

Order Name: Florence Copper

| Analyses | Result | PRL | PQL | Qual | Units | DF | Prep Date | Analysis Date | Analyst |
|---|--------|--------|------|------|-------|----|-----------------|-----------------|---------|
| Volatile Organic Compounds by GC/MS-SW8260B | | | | | | | | | |
| Benzene | ND | | 0.50 | | ug/L | 1 | 05/07/2018 1824 | 05/07/2018 2344 | KP |
| Carbon disulfide | ND | | 2.0 | | ug/L | 1 | 05/07/2018 1824 | 05/07/2018 2344 | KP |
| Ethylbenzene | ND | | 0.50 | | ug/L | 1 | 05/07/2018 1824 | 05/07/2018 2344 | KP |
| Toluene | ND | | 0.50 | | ug/L | 1 | 05/07/2018 1824 | 05/07/2018 2344 | KP |
| Xylenes, Total | ND | | 1.5 | | ug/L | 1 | 05/07/2018 1824 | 05/07/2018 2344 | KP |
| Surr: 4-Bromofluorobenzene | 101 | 70-130 | | | %REC | 1 | 05/07/2018 1824 | 05/07/2018 2344 | KP |
| Surr: Dibromofluoromethane | 110 | 70-130 | | | %REC | 1 | 05/07/2018 1824 | 05/07/2018 2344 | KP |
| Surr: Toluene-d8 | 103 | 70-130 | | | %REC | 1 | 05/07/2018 1824 | 05/07/2018 2344 | KP |

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

QC Summary

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qual |
|---------------------------------|--------|-----------------|-------|---------------------------------|---------------|------|---------------------------------|------|-----------|------|
| Batch 1804269 - E 245.1 | | | | | | | | | | |
| Blank (1804269-BLK1) | | | | Prepared & Analyzed: 04/26/2018 | | | | | | |
| Mercury | ND | 0.0010 | mg/L | | | | | | | |
| LCS (1804269-BS1) | | | | Prepared & Analyzed: 04/26/2018 | | | | | | |
| Mercury | 0.0049 | 0.0010 | mg/L | 0.005000 | | 98 | 85-115 | | | |
| LCS Dup (1804269-BSD1) | | | | Prepared & Analyzed: 04/26/2018 | | | | | | |
| Mercury | 0.0048 | 0.0010 | mg/L | 0.005000 | | 95 | 85-115 | 2 | 20 | |
| Matrix Spike (1804269-MS1) | | | | Source: 18D0394-01 | | | Prepared & Analyzed: 04/26/2018 | | | |
| Mercury | 0.0050 | 0.0010 | mg/L | 0.005000 | 0.00020 | 97 | 85-115 | | | |
| Matrix Spike Dup (1804269-MSD1) | | | | Source: 18D0394-01 | | | Prepared & Analyzed: 04/26/2018 | | | |
| Mercury | 0.0050 | 0.0010 | mg/L | 0.005000 | 0.00020 | 96 | 85-115 | 1 | 20 | |
| Batch 1804292 - E200.8 (5.4) | | | | | | | | | | |
| Blank (1804292-BLK1) | | | | Prepared & Analyzed: 04/30/2018 | | | | | | |
| Uranium | ND | 0.00050 | mg/L | | | | | | | |
| LCS (1804292-BS1) | | | | Prepared & Analyzed: 04/30/2018 | | | | | | |
| Uranium | 0.046 | 0.00050 | mg/L | 0.05000 | | 92 | 85-115 | | | |
| LCS Dup (1804292-BSD1) | | | | Prepared & Analyzed: 04/30/2018 | | | | | | |
| Uranium | 0.046 | 0.00050 | mg/L | 0.05000 | | 92 | 85-115 | 0.2 | 20 | |
| Matrix Spike (1804292-MS1) | | | | Source: 18D0614-01 | | | Prepared & Analyzed: 04/30/2018 | | | |
| Uranium | 0.051 | 0.00050 | mg/L | 0.05000 | 0.0015 | 99 | 70-130 | | | |
| Batch 1805051 - E 200.7 (4.4) | | | | | | | | | | |
| Blank (1805051-BLK1) | | | | Prepared & Analyzed: 05/04/2018 | | | | | | |
| Calcium | ND | 4.0 | mg/L | | | | | | | |
| Iron | ND | 0.30 | mg/L | | | | | | | |
| Magnesium | ND | 3.0 | mg/L | | | | | | | |
| Potassium | ND | 5.0 | mg/L | | | | | | | |
| Sodium | ND | 5.0 | mg/L | | | | | | | |
| LCS (1805051-BS1) | | | | Prepared & Analyzed: 05/04/2018 | | | | | | |
| Calcium | 11 | 4.0 | mg/L | 10.00 | | 109 | 85-115 | | | |
| Iron | 1.0 | 0.30 | mg/L | 1.000 | | 104 | 85-115 | | | |
| Magnesium | 10 | 3.0 | mg/L | 10.00 | | 105 | 85-115 | | | |
| Potassium | 10 | 5.0 | mg/L | 10.00 | | 105 | 85-115 | | | |
| Sodium | 10 | 5.0 | mg/L | 10.00 | | 105 | 85-115 | | | |
| LCS Dup (1805051-BSD1) | | | | Prepared & Analyzed: 05/04/2018 | | | | | | |
| Calcium | 11 | 4.0 | mg/L | 10.00 | | 110 | 85-115 | 1 | 20 | |
| Iron | 1.0 | 0.30 | mg/L | 1.000 | | 105 | 85-115 | 0.5 | 20 | |
| Magnesium | 10 | 3.0 | mg/L | 10.00 | | 105 | 85-115 | 0.06 | 20 | |
| Potassium | 10 | 5.0 | mg/L | 10.00 | | 105 | 85-115 | 0.05 | 20 | |
| Sodium | 11 | 5.0 | mg/L | 10.00 | | 109 | 85-115 | 4 | 20 | |

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

QC Summary

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qual |
|-------------------------------|--------|---------------------------------|-------|---------------------------------|---------------|------|-------------|-----|-----------|------|
| Batch 1805051 - E 200.7 (4.4) | | | | | | | | | | |
| Matrix Spike (1805051-MS1) | | Source: 18D0619-01 | | Prepared & Analyzed: 05/04/2018 | | | | | | |
| Calcium | 150 | 4.0 | mg/L | 10.00 | 140 | 59 | 70-130 | | | M3 |
| Iron | 1.1 | 0.30 | mg/L | 1.000 | 0.028 | 105 | 70-130 | | | |
| Magnesium | 38 | 3.0 | mg/L | 10.00 | 27 | 108 | 70-130 | | | |
| Potassium | 17 | 5.0 | mg/L | 10.00 | 6.8 | 105 | 70-130 | | | |
| Sodium | 170 | 5.0 | mg/L | 10.00 | 170 | 30 | 70-130 | | | M3 |
| Matrix Spike (1805051-MS2) | | Source: 18E0021-01 | | Prepared & Analyzed: 05/04/2018 | | | | | | |
| Calcium | 64 | 4.0 | mg/L | 10.00 | 54 | 103 | 70-130 | | | |
| Iron | 1.0 | 0.30 | mg/L | 1.000 | 0.0060 | 101 | 70-130 | | | |
| Magnesium | 21 | 3.0 | mg/L | 10.00 | 11 | 99 | 70-130 | | | |
| Potassium | 15 | 5.0 | mg/L | 10.00 | 4.7 | 104 | 70-130 | | | |
| Sodium | 99 | 5.0 | mg/L | 10.00 | 90 | 87 | 70-130 | | | |
| Batch 1805069 - E 200.8 (5.4) | | | | | | | | | | |
| Blank (1805069-BLK1) | | Prepared & Analyzed: 05/07/2018 | | | | | | | | |
| Aluminum | ND | 0.0400 | mg/L | | | | | | | |
| Antimony | ND | 0.00050 | mg/L | | | | | | | |
| Arsenic | ND | 0.00050 | mg/L | | | | | | | |
| Barium | ND | 0.00050 | mg/L | | | | | | | |
| Beryllium | ND | 0.00025 | mg/L | | | | | | | |
| Cadmium | ND | 0.00025 | mg/L | | | | | | | |
| Chromium | ND | 0.00050 | mg/L | | | | | | | |
| Cobalt | ND | 0.00025 | mg/L | | | | | | | |
| Copper | ND | 0.00050 | mg/L | | | | | | | |
| Lead | ND | 0.00050 | mg/L | | | | | | | |
| Manganese | ND | 0.00025 | mg/L | | | | | | | |
| Nickel | ND | 0.00050 | mg/L | | | | | | | |
| Selenium | ND | 0.0025 | mg/L | | | | | | | |
| Thallium | ND | 0.00050 | mg/L | | | | | | | |
| Zinc | ND | 0.040 | mg/L | | | | | | | |
| LCS (1805069-BS1) | | Prepared & Analyzed: 05/07/2018 | | | | | | | | |
| Aluminum | 0.104 | 0.0400 | mg/L | 0.1000 | | 104 | 85-115 | | | |
| Antimony | 0.048 | 0.00050 | mg/L | 0.05000 | | 96 | 85-115 | | | |
| Arsenic | 0.050 | 0.00050 | mg/L | 0.05000 | | 100 | 85-115 | | | |
| Barium | 0.050 | 0.00050 | mg/L | 0.05000 | | 100 | 85-115 | | | |
| Beryllium | 0.049 | 0.00025 | mg/L | 0.05000 | | 97 | 85-115 | | | |
| Cadmium | 0.050 | 0.00025 | mg/L | 0.05000 | | 100 | 85-115 | | | |
| Chromium | 0.051 | 0.00050 | mg/L | 0.05000 | | 102 | 85-115 | | | |
| Cobalt | 0.051 | 0.00025 | mg/L | 0.05000 | | 101 | 85-115 | | | |
| Copper | 0.051 | 0.00050 | mg/L | 0.05000 | | 103 | 85-115 | | | |
| Lead | 0.049 | 0.00050 | mg/L | 0.05000 | | 98 | 85-115 | | | |
| Manganese | 0.050 | 0.00025 | mg/L | 0.05000 | | 101 | 85-115 | | | |
| Nickel | 0.051 | 0.00050 | mg/L | 0.05000 | | 102 | 85-115 | | | |
| Selenium | 0.051 | 0.0025 | mg/L | 0.05000 | | 103 | 85-115 | | | |
| Thallium | 0.050 | 0.00050 | mg/L | 0.05000 | | 101 | 85-115 | | | |
| Zinc | 0.10 | 0.040 | mg/L | 0.1000 | | 101 | 85-115 | | | |

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

QC Summary

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qual |
|-------------------------------|--------|-----------------|-------|---------------------------------|---------------------------------|------|-------------|------|-----------|------|
| Batch 1805069 - E 200.8 (5.4) | | | | | | | | | | |
| LCS Dup (1805069-BSD1) | | | | Prepared & Analyzed: 05/07/2018 | | | | | | |
| Aluminum | 0.115 | 0.0400 | mg/L | 0.1000 | | 115 | 85-115 | 10 | 20 | |
| Antimony | 0.048 | 0.00050 | mg/L | 0.05000 | | 96 | 85-115 | 0.7 | 20 | |
| Arsenic | 0.050 | 0.00050 | mg/L | 0.05000 | | 101 | 85-115 | 0.8 | 20 | |
| Barium | 0.051 | 0.00050 | mg/L | 0.05000 | | 102 | 85-115 | 1 | 20 | |
| Beryllium | 0.049 | 0.00025 | mg/L | 0.05000 | | 97 | 85-115 | 0.2 | 20 | |
| Cadmium | 0.050 | 0.00025 | mg/L | 0.05000 | | 100 | 85-115 | 0.2 | 20 | |
| Chromium | 0.051 | 0.00050 | mg/L | 0.05000 | | 102 | 85-115 | 0.4 | 20 | |
| Cobalt | 0.050 | 0.00025 | mg/L | 0.05000 | | 101 | 85-115 | 0.5 | 20 | |
| Copper | 0.052 | 0.00050 | mg/L | 0.05000 | | 105 | 85-115 | 2 | 20 | |
| Lead | 0.049 | 0.00050 | mg/L | 0.05000 | | 98 | 85-115 | 0.1 | 20 | |
| Manganese | 0.050 | 0.00025 | mg/L | 0.05000 | | 101 | 85-115 | 0.09 | 20 | |
| Nickel | 0.051 | 0.00050 | mg/L | 0.05000 | | 103 | 85-115 | 0.8 | 20 | |
| Selenium | 0.052 | 0.0025 | mg/L | 0.05000 | | 104 | 85-115 | 2 | 20 | |
| Thallium | 0.050 | 0.00050 | mg/L | 0.05000 | | 101 | 85-115 | 0.06 | 20 | |
| Zinc | 0.10 | 0.040 | mg/L | 0.1000 | | 104 | 85-115 | 3 | 20 | |
| Matrix Spike (1805069-MS1) | | | | Source: 18D0693-01 | Prepared & Analyzed: 05/07/2018 | | | | | |
| Aluminum | 0.239 | 0.0400 | mg/L | 0.1000 | 0.166 | 74 | 70-130 | | | |
| Antimony | 0.045 | 0.00050 | mg/L | 0.05000 | 0.00024 | 90 | 70-130 | | | |
| Arsenic | 0.056 | 0.00050 | mg/L | 0.05000 | 0.0035 | 104 | 70-130 | | | |
| Barium | 0.16 | 0.00050 | mg/L | 0.05000 | 0.12 | 94 | 70-130 | | | |
| Beryllium | 0.045 | 0.00025 | mg/L | 0.05000 | 0.000029 | 90 | 70-130 | | | |
| Cadmium | 0.047 | 0.00025 | mg/L | 0.05000 | ND | 94 | 70-130 | | | |
| Chromium | 0.049 | 0.00050 | mg/L | 0.05000 | 0.00052 | 98 | 70-130 | | | |
| Cobalt | 0.048 | 0.00025 | mg/L | 0.05000 | 0.00097 | 95 | 70-130 | | | |
| Copper | 0.051 | 0.00050 | mg/L | 0.05000 | 0.0020 | 98 | 70-130 | | | |
| Lead | 0.047 | 0.00050 | mg/L | 0.05000 | 0.00016 | 94 | 70-130 | | | |
| Manganese | 0.054 | 0.00025 | mg/L | 0.05000 | 0.0075 | 94 | 70-130 | | | |
| Nickel | 0.049 | 0.00050 | mg/L | 0.05000 | 0.0018 | 94 | 70-130 | | | |
| Selenium | 0.057 | 0.0025 | mg/L | 0.05000 | ND | 114 | 70-130 | | | |
| Thallium | 0.048 | 0.00050 | mg/L | 0.05000 | 0.000038 | 96 | 70-130 | | | |
| Zinc | 0.11 | 0.040 | mg/L | 0.1000 | ND | 109 | 70-130 | | | |

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

QC Summary

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qual |
|--|--------|---|----------|---|---------------|------|-------------|-----|-----------|------|
| Batch 1804261 - SM2540 C | | | | | | | | | | |
| Duplicate (1804261-DUP1) | | Source: 18D0606-01 | | Prepared: 04/26/2018 Analyzed: 04/27/2018 | | | | | | |
| Total Dissolved Solids (Residue, Filterable) | 630 | 20 | mg/L | | 630 | | | 0.3 | 5 | |
| Duplicate (1804261-DUP2) | | Source: 18D0606-02 | | Prepared: 04/26/2018 Analyzed: 04/27/2018 | | | | | | |
| Total Dissolved Solids (Residue, Filterable) | 610 | 20 | mg/L | | 620 | | | 0.8 | 5 | |
| Batch 1804268 - E335.4 | | | | | | | | | | |
| Blank (1804268-BLK1) | | Prepared: 04/26/2018 Analyzed: 04/30/2018 | | | | | | | | |
| Cyanide | ND | 0.10 | mg/L | | | | | | | |
| LCS (1804268-BS1) | | Prepared: 04/26/2018 Analyzed: 04/30/2018 | | | | | | | | |
| Cyanide | 2.0 | 0.10 | mg/L | 2.000 | | 101 | 90-110 | | | |
| LCS Dup (1804268-BSD1) | | Prepared: 04/26/2018 Analyzed: 04/30/2018 | | | | | | | | |
| Cyanide | 2.0 | 0.10 | mg/L | 2.000 | | 101 | 90-110 | 0.1 | 20 | |
| Matrix Spike (1804268-MS1) | | Source: 18D0602-03 | | Prepared: 04/26/2018 Analyzed: 04/30/2018 | | | | | | |
| Cyanide | 2.1 | 0.10 | mg/L | 2.000 | ND | 103 | 90-110 | | | |
| Matrix Spike Dup (1804268-MSD1) | | Source: 18D0602-03 | | Prepared: 04/26/2018 Analyzed: 04/30/2018 | | | | | | |
| Cyanide | 2.0 | 0.10 | mg/L | 2.000 | ND | 98 | 90-110 | 5 | 20 | |
| Batch 1804272 - E150.1 | | | | | | | | | | |
| Duplicate (1804272-DUP1) | | Source: 18D0662-02 | | Prepared & Analyzed: 04/26/2018 | | | | | | |
| pH (pH Units) | 7.8 | | - | | 7.8 | | | 0.1 | 200 | H5 |
| Temperature (°C) | 21 | | - | | 21 | | | 2 | 200 | H5 |
| Batch 1805027 - SM2320B | | | | | | | | | | |
| LCS (1805027-BS1) | | Prepared & Analyzed: 05/03/2018 | | | | | | | | |
| Alkalinity, Total (As CaCO3) | 240 | 2.0 | mg/L | 250.0 | | 96 | 90-110 | | | |
| LCS Dup (1805027-BSD1) | | Prepared & Analyzed: 05/03/2018 | | | | | | | | |
| Alkalinity, Total (As CaCO3) | 240 | 2.0 | mg/L | 250.0 | | 96 | 90-110 | 0 | 10 | |
| Matrix Spike (1805027-MS1) | | Source: 18D0606-02 | | Prepared & Analyzed: 05/03/2018 | | | | | | |
| Alkalinity, Total (As CaCO3) | 370 | 2.0 | mg/L | 250.0 | 130 | 96 | 85-115 | | | |
| Matrix Spike Dup (1805027-MSD1) | | Source: 18D0606-02 | | Prepared & Analyzed: 05/03/2018 | | | | | | |
| Alkalinity, Total (As CaCO3) | 370 | 2.0 | mg/L | 250.0 | 130 | 95 | 85-115 | 0.5 | 10 | |
| Batch 1805103 - SM2510 B | | | | | | | | | | |
| LCS (1805103-BS1) | | Prepared & Analyzed: 05/09/2018 | | | | | | | | |
| Conductivity | 140 | 0.10 | µmhos/cm | 141.2 | | 101 | 0-200 | | | |
| LCS Dup (1805103-BSD1) | | Prepared & Analyzed: 05/09/2018 | | | | | | | | |
| Conductivity | 140 | 0.10 | µmhos/cm | 141.2 | | 101 | 0-200 | 0.7 | 200 | |
| Duplicate (1805103-DUP1) | | Source: 18E0192-01 | | Prepared & Analyzed: 05/09/2018 | | | | | | |
| Conductivity | 4.0 | 0.10 | µmhos/cm | | 4.0 | | | 0 | 10 | |

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

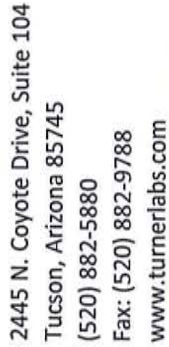
QC Summary

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qual |
|---------------------------------|--------|-----------------|-------|---------------------------------|---------------------------------|------|-------------|-----|-----------|------|
| Batch 1805074 - SW8260B | | | | | | | | | | |
| Blank (1805074-BLK1) | | | | Prepared & Analyzed: 05/07/2018 | | | | | | |
| Benzene | ND | 0.50 | ug/L | | | | | | | |
| Carbon disulfide | ND | 2.0 | ug/L | | | | | | | |
| Ethylbenzene | ND | 0.50 | ug/L | | | | | | | |
| Toluene | ND | 0.50 | ug/L | | | | | | | |
| Xylenes, Total | ND | 1.5 | ug/L | | | | | | | |
| Surrogate: 4-Bromofluorobenzene | 25.0 | | ug/L | 25.00 | | 100 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 26.9 | | ug/L | 25.00 | | 107 | 70-130 | | | |
| Surrogate: Toluene-d8 | 25.1 | | ug/L | 25.00 | | 100 | 70-130 | | | |
| LCS (1805074-BS1) | | | | Prepared & Analyzed: 05/07/2018 | | | | | | |
| 1,1-Dichloroethene | 29 | | ug/L | 25.00 | | 114 | 70-130 | | | |
| Benzene | 27 | | ug/L | 25.00 | | 109 | 70-130 | | | |
| Chlorobenzene | 29 | | ug/L | 25.00 | | 115 | 70-130 | | | |
| Toluene | 25 | | ug/L | 25.00 | | 101 | 70-130 | | | |
| Trichloroethene | 26 | | ug/L | 25.00 | | 103 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 24.6 | | ug/L | 25.00 | | 98 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 25.6 | | ug/L | 25.00 | | 102 | 70-130 | | | |
| Surrogate: Toluene-d8 | 24.8 | | ug/L | 25.00 | | 99 | 70-130 | | | |
| LCS Dup (1805074-BSD1) | | | | Prepared & Analyzed: 05/07/2018 | | | | | | |
| 1,1-Dichloroethene | 27 | | ug/L | 25.00 | | 110 | 70-130 | 4 | 30 | |
| Benzene | 26 | | ug/L | 25.00 | | 104 | 70-130 | 5 | 30 | |
| Chlorobenzene | 26 | | ug/L | 25.00 | | 105 | 70-130 | 9 | 30 | |
| Toluene | 24 | | ug/L | 25.00 | | 96 | 70-130 | 5 | 30 | |
| Trichloroethene | 25 | | ug/L | 25.00 | | 98 | 70-130 | 4 | 30 | |
| Surrogate: 4-Bromofluorobenzene | 24.4 | | ug/L | 25.00 | | 98 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 26.1 | | ug/L | 25.00 | | 104 | 70-130 | | | |
| Surrogate: Toluene-d8 | 25.1 | | ug/L | 25.00 | | 100 | 70-130 | | | |
| Matrix Spike (1805074-MS1) | | | | Source: 18D0582-02 | Prepared & Analyzed: 05/07/2018 | | | | | |
| 1,1-Dichloroethene | 27 | | ug/L | 25.00 | 0.070 | 109 | 70-130 | | | |
| Benzene | 26 | | ug/L | 25.00 | 0.020 | 104 | 70-130 | | | |
| Chlorobenzene | 26 | | ug/L | 25.00 | 0.0 | 105 | 70-130 | | | |
| Toluene | 27 | | ug/L | 25.00 | 3.5 | 95 | 70-130 | | | |
| Trichloroethene | 24 | | ug/L | 25.00 | 0.040 | 97 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 24.4 | | ug/L | 25.00 | | 98 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 26.4 | | ug/L | 25.00 | | 106 | 70-130 | | | |
| Surrogate: Toluene-d8 | 24.9 | | ug/L | 25.00 | | 100 | 70-130 | | | |
| Matrix Spike Dup (1805074-MSD1) | | | | Source: 18D0582-02 | Prepared & Analyzed: 05/07/2018 | | | | | |
| 1,1-Dichloroethene | 27 | | ug/L | 25.00 | 0.070 | 108 | 70-130 | 0.8 | 30 | |
| Benzene | 25 | | ug/L | 25.00 | 0.020 | 101 | 70-130 | 2 | 30 | |
| Chlorobenzene | 26 | | ug/L | 25.00 | 0.0 | 105 | 70-130 | 0.3 | 30 | |
| Toluene | 27 | | ug/L | 25.00 | 3.5 | 95 | 70-130 | 0.1 | 30 | |
| Trichloroethene | 24 | | ug/L | 25.00 | 0.040 | 95 | 70-130 | 2 | 30 | |
| Surrogate: 4-Bromofluorobenzene | 24.7 | | ug/L | 25.00 | | 99 | 70-130 | | | |
| Surrogate: Dibromofluoromethane | 26.4 | | ug/L | 25.00 | | 106 | 70-130 | | | |
| Surrogate: Toluene-d8 | 25.3 | | ug/L | 25.00 | | 101 | 70-130 | | | |

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

QC Summary

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qual |
|---------------------------------|--------|-----------------------|-------|---------------------------------|---------------|------|-------------|-----|-----------|------|
| Batch 1804245 - E300.0 (2.1) | | | | | | | | | | |
| Blank (1804245-BLK1) | | | | Prepared & Analyzed: 04/25/2018 | | | | | | |
| Chloride | ND | 1.0 | mg/L | | | | | | | |
| Fluoride | ND | 0.50 | mg/L | | | | | | | |
| Nitrogen, Nitrate (As N) | ND | 0.50 | mg/L | | | | | | | |
| Nitrogen, Nitrite (As N) | ND | 0.10 | mg/L | | | | | | | |
| Sulfate | ND | 5.0 | mg/L | | | | | | | |
| LCS (1804245-BS1) | | | | Prepared & Analyzed: 04/25/2018 | | | | | | |
| Chloride | 12 | 1.0 | mg/L | 12.50 | | 92 | 90-110 | | | |
| Fluoride | 2.0 | 0.50 | mg/L | 2.000 | | 101 | 90-110 | | | |
| Nitrogen, Nitrate (As N) | 4.7 | 0.50 | mg/L | 5.000 | | 95 | 90-110 | | | |
| Nitrogen, Nitrite (As N) | 2.3 | 0.10 | mg/L | 2.500 | | 92 | 90-110 | | | |
| Sulfate | 12 | 5.0 | mg/L | 12.50 | | 96 | 90-110 | | | |
| LCS Dup (1804245-BSD1) | | | | Prepared & Analyzed: 04/25/2018 | | | | | | |
| Chloride | 12 | 1.0 | mg/L | 12.50 | | 94 | 90-110 | 2 | 10 | |
| Fluoride | 2.0 | 0.50 | mg/L | 2.000 | | 101 | 90-110 | 0.4 | 10 | |
| Nitrogen, Nitrate (As N) | 4.9 | 0.50 | mg/L | 5.000 | | 98 | 90-110 | 3 | 10 | |
| Nitrogen, Nitrite (As N) | 2.4 | 0.10 | mg/L | 2.500 | | 95 | 90-110 | 3 | 10 | |
| Sulfate | 12 | 5.0 | mg/L | 12.50 | | 98 | 90-110 | 3 | 10 | |
| Matrix Spike (1804245-MS1) | | Source: 18D0613-08 | | Prepared & Analyzed: 04/25/2018 | | | | | | |
| Fluoride | 3.7 | 0.50 | mg/L | 2.000 | 1.7 | 100 | 80-120 | | | |
| Nitrogen, Nitrate (As N) | 4.7 | 0.50 | mg/L | 5.000 | 0.22 | 89 | 80-120 | | | |
| Matrix Spike (1804245-MS2) | | Source: 18D0625-01 | | Prepared & Analyzed: 04/26/2018 | | | | | | |
| Nitrogen, Nitrate (As N) | 5.0 | 0.50 | mg/L | 5.000 | 0.46 | 92 | 80-120 | | | |
| Nitrogen, Nitrite (As N) | 2.2 | 0.10 | mg/L | 2.500 | ND | 88 | 80-120 | | | |
| Matrix Spike (1804245-MS3) | | Source: 18D0614-01RE1 | | Prepared & Analyzed: 04/26/2018 | | | | | | |
| Chloride | 17 | | mg/L | 12.50 | 6.4 | 88 | 80-120 | | | |
| Sulfate | 28 | | mg/L | 12.50 | 18 | 85 | 80-120 | | | |
| Matrix Spike Dup (1804245-MSD1) | | Source: 18D0613-08 | | Prepared & Analyzed: 04/25/2018 | | | | | | |
| Fluoride | 3.7 | 0.50 | mg/L | 2.000 | 1.7 | 100 | 80-120 | 0.4 | 10 | |
| Nitrogen, Nitrate (As N) | 4.7 | 0.50 | mg/L | 5.000 | 0.22 | 90 | 80-120 | 0.6 | 10 | |
| Matrix Spike Dup (1804245-MSD2) | | Source: 18D0625-01 | | Prepared & Analyzed: 04/26/2018 | | | | | | |
| Nitrogen, Nitrate (As N) | 5.1 | 0.50 | mg/L | 5.000 | 0.46 | 92 | 80-120 | 0.2 | 10 | |
| Nitrogen, Nitrite (As N) | 2.2 | 0.10 | mg/L | 2.500 | ND | 88 | 80-120 | 0.4 | 10 | |
| Matrix Spike Dup (1804245-MSD3) | | Source: 18D0614-01RE1 | | Prepared & Analyzed: 04/26/2018 | | | | | | |
| Chloride | 18 | | mg/L | 12.50 | 6.4 | 89 | 80-120 | 0.6 | 10 | |
| Sulfate | 29 | | mg/L | 12.50 | 18 | 86 | 80-120 | 0.6 | 10 | |



TURNER WORK ORDER # 18D0619 DATE 4/23/18 PAGE 1 OF 1

Page 13 of 32

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Phoenix

4625 East Cotton Ctr Blvd

Suite 189

Phoenix, AZ 85040

Tel: (602)437-3340

TestAmerica Job ID: 550-101943-1

Client Project/Site: 18D0619

For:

Turner Laboratories, Inc.

2445 North Coyote Drive

Suite 104

Tucson, Arizona 85745

Attn: Kevin Brim



Authorized for release by:

5/16/2018 12:23:25 PM

Ken Baker, Project Manager II

(602)659-7624

ken.baker@testamericainc.com

LINKS

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results through

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Visit us at:

www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

| | |
|----------------------------------|----|
| Cover Page | 1 |
| Table of Contents | 2 |
| Definitions/Glossary | 3 |
| Case Narrative | 4 |
| Sample Summary | 5 |
| Detection Summary | 6 |
| Client Sample Results | 7 |
| Surrogate Summary | 8 |
| QC Sample Results | 9 |
| QC Association Summary | 10 |
| Lab Chronicle | 11 |
| Certification Summary | 12 |
| Method Summary | 13 |
| Chain of Custody | 14 |
| Receipt Checklists | 15 |



Definitions/Glossary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Qualifiers

GC Semi VOA

| Qualifier | Qualifier Description |
|-----------|--|
| Q9 | Insufficient sample received to meet method QC requirements. |

Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|----------------|---|
| α | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |

Case Narrative

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Job ID: 550-101943-1

Laboratory: TestAmerica Phoenix

Narrative

Job Narrative
550-101943-1

Comments

No additional comments.

Receipt

The sample was received on 4/27/2018 10:50 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.8° C.

GC Semi VOA

Method(s) 8015D: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD) associated with preparation batch 550-145985 and analytical batch 550-146884. Affected samples have been added a Q9 qualifier. 18D0619-01 (550-101943-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method(s) 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 3510C.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Sample Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---------------|------------------|--------|----------------|----------------|
| 550-101943-1 | 18D0619-01 | Water | 04/23/18 15:55 | 04/27/18 10:50 |

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Detection Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Client Sample ID: 18D0619-01 Lab Sample ID: 550-101943-1

| Analyte | Result | Qualifier | RL | Unit | Dil Fac | D | Method | Prep Type |
|---------------|--------|-----------|------|------|---------|---|--------|-----------|
| ORO (C22-C32) | 0.21 | Q9 | 0.20 | mg/L | 1 | | 8015D | Total/NA |

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Client Sample ID: 18D0619-01

Date Collected: 04/23/18 15:55

Date Received: 04/27/18 10:50

Lab Sample ID: 550-101943-1

Matrix: Water

Method: 8015D - Diesel Range Organics (DRO) (GC)

| Analyte | Result | Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------|-----------|-----------|----------|------|---|----------------|----------------|---------|
| ORO (C22-C32) | 0.21 | Q9 | 0.20 | mg/L | | 04/30/18 14:16 | 05/10/18 23:29 | 1 |
| DRO (C10-C22) | ND | Q9 | 0.10 | mg/L | | 04/30/18 14:16 | 05/10/18 23:29 | 1 |
| Surrogate | %Recovery | Qualifier | Limits | | | Prepared | Analyzed | Dil Fac |
| o-Terphenyl (Surr) | 79 | | 10 - 150 | | | 04/30/18 14:16 | 05/10/18 23:29 | 1 |

Surrogate Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Method: 8015D - Diesel Range Organics (DRO) (GC)

Matrix: Water

Prep Type: Total/NA

| Percent Surrogate Recovery (Acceptance Limits) | | |
|--|------------------------|------------------|
| Lab Sample ID | Client Sample ID | OTPH (10-150) |
| 550-101943-1 | 18D0619-01 | 79 |
| LCS 550-145985/2-A | Lab Control Sample | 79 |
| LCSD 550-145985/3-A | Lab Control Sample Dup | 79 |
| MB 550-145985/1-A | Method Blank | 65 |
| Surrogate Legend | | |
| OTPH = o-Terphenyl (Surr) | | |

- 1
- 2
- 3
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QC Sample Results

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 550-145985/1-A

Matrix: Water

Analysis Batch: 146884

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 145985

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------|--------------|--------------|----------|------|---|----------------|----------------|---------|
| ORO (C22-C32) | ND | | 0.20 | mg/L | | 04/30/18 14:15 | 05/11/18 11:16 | 1 |
| DRO (C10-C22) | ND | | 0.10 | mg/L | | 04/30/18 14:15 | 05/11/18 11:16 | 1 |
| Surrogate | MB %Recovery | MB Qualifier | Limits | | | Prepared | Analyzed | Dil Fac |
| o-Terphenyl (Surr) | 65 | | 10 - 150 | | | 04/30/18 14:15 | 05/11/18 11:16 | 1 |

Lab Sample ID: LCS 550-145985/2-A

Matrix: Water

Analysis Batch: 146884

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 145985

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|--------------------|---------------|---------------|---------------|------|---|------|--------------|
| ORO (C22-C32) | 1.60 | 1.59 | | mg/L | | 99 | 69 - 107 |
| DRO (C10-C22) | 0.400 | 0.450 | | mg/L | | 113 | 42 - 133 |
| Surrogate | LCS %Recovery | LCS Qualifier | Limits | | | | |
| o-Terphenyl (Surr) | 79 | | 10 - 150 | | | | |

Lab Sample ID: LCSD 550-145985/3-A

Matrix: Water

Analysis Batch: 146884

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 145985

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | Limit |
|--------------------|----------------|----------------|----------------|------|---|------|--------------|-----|-------|
| ORO (C22-C32) | 1.60 | 1.59 | | mg/L | | 100 | 69 - 107 | 0 | 20 |
| DRO (C10-C22) | 0.400 | 0.447 | | mg/L | | 112 | 42 - 133 | 1 | 22 |
| Surrogate | LCSD %Recovery | LCSD Qualifier | Limits | | | | | | |
| o-Terphenyl (Surr) | 79 | | 10 - 150 | | | | | | |

TestAmerica Phoenix

QC Association Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

GC Semi VOA

Prep Batch: 145985

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 550-101943-1 | 18D0619-01 | Total/NA | Water | 3510C | |
| MB 550-145985/1-A | Method Blank | Total/NA | Water | 3510C | |
| LCS 550-145985/2-A | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 550-145985/3-A | Lab Control Sample Dup | Total/NA | Water | 3510C | |

Analysis Batch: 146884

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 550-101943-1 | 18D0619-01 | Total/NA | Water | 8015D | 145985 |
| MB 550-145985/1-A | Method Blank | Total/NA | Water | 8015D | 145985 |
| LCS 550-145985/2-A | Lab Control Sample | Total/NA | Water | 8015D | 145985 |
| LCSD 550-145985/3-A | Lab Control Sample Dup | Total/NA | Water | 8015D | 145985 |

Lab Chronicle

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Client Sample ID: 18D0619-01
Date Collected: 04/23/18 15:55
Date Received: 04/27/18 10:50

Lab Sample ID: 550-101943-1
Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 3510C | | | 145985 | 04/30/18 14:16 | REM | TAL PHX |
| Total/NA | Analysis | 8015D | | 1 | 146884 | 05/10/18 23:29 | TC1 | TAL PHX |

Laboratory References:
TAL PHX = TestAmerica Phoenix, 4625 East Cotton Ctr Blvd, Suite 189, Phoenix, AZ 85040, TEL (602)437-3340

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Accreditation/Certification Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Laboratory: TestAmerica Phoenix

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

| | | | | |
|-----------------|---------------|------------|-----------------------|-----------------|
| Authority | Program | EPA Region | Identification Number | Expiration Date |
| Arizona | State Program | 9 | AZ0728 | 06-09-18 |
| Analysis Method | Prep Method | Matrix | Analyte | |

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Method Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

| Method | Method Description | Protocol | Laboratory |
|--------|--|----------|------------|
| 8015D | Diesel Range Organics (DRO) (GC) | SW846 | TAL PHX |
| 3510C | Liquid-Liquid Extraction (Separatory Funnel) | SW846 | TAL PHX |

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL PHX = TestAmerica Phoenix, 4625 East Cotton Ctr Blvd, Suite 189, Phoenix, AZ 85040, TEL (602)437-3340

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SUBCONTRACT ORDER

Turner Laboratories, Inc.

18D0619

101943

SENDING LABORATORY:

Turner Laboratories, Inc.
2445 N. Coyote Drive, Ste #104
Tucson, AZ 85745
Phone: 520.882.5880
Fax: 520.882.9788
Project Manager: Kevin Brim

RECEIVING LABORATORY:

TestAmerica Phoenix
4625 East Cotton Center Boulevard Suite 189
Phoenix, AZ 85540
Phone : (602) 437-3340
Fax:
Please CC Kevin Brim Kbrim@turnerlabs.com

Analysis

Expires

Laboratory ID

Comments

Sample ID: 18D0619-01 Drinking Water Sampled: 04/23/2018 15:55

8015D Sub

04/30/2018 15:55

8015D DRO and ORO Paramaters Only

Containers Supplied:

8015D Sub

o-Terphenyl
C10-C32 (Total)
C22-C32 (Oil Range Organics)
C10-C22 (Diesel Range Organics)
C6-C10 (Gasoline Range Organics)

550-101943 Chain of Custody



TA-PHX

3.8 L
LPS
GVR

Released By

Date

Received By

Date

Released By

Date

Received By

Date

Login Sample Receipt Checklist

Client: Turner Laboratories, Inc.

Job Number: 550-101943-1

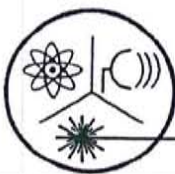
Login Number: 101943

List Number: 1

Creator: Gravlin, Andrea

List Source: TestAmerica Phoenix

| Question | Answer | Comment |
|--|--------|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | True | |
| The cooler's custody seal, if present, is intact. | True | |
| Sample custody seals, if present, are intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | False | Check done at department level as required. |



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121

(480) 897-9459

Website: www.radsafe.com

FAX (480) 892-5446

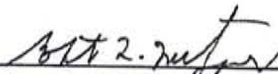
Radiochemical Activity in Water (pCi/L)

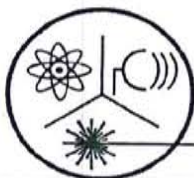
Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

Sampling Date: April 23, 2018
Sample Received: May 01, 2018
Analysis Completed: May 22, 2018

| Sample ID | Gross Alpha Activity Method 600/00-02 (pCi/L) | Uranium Activity Method ASTM D6239 (pCi/L) | Adjusted Gross Alpha (pCi/L) | Radium 226 Activity Method GammaRay HPGE (pCi/L) | Radium 228 Activity Method GammaRay HPGE (pCi/L) | Total Radium (pCi/L) |
|------------|---|---|---------------------------------------|---|---|----------------------------|
| 18D0619-01 | 17.7 ± 0.9 | 12.9 ± 1.2 | 4.8 ± 1.5 | 3.1 ± 0.3 | 3.1 ± 0.4 | 6.2 ± 0.5 |

| | | | | | | |
|------------------|----------|-----------|-----------|----------|----------|----------|
| Date of Analysis | 5/2/2018 | 5/21/2018 | 5/21/2018 | 5/4/2018 | 5/4/2018 | 5/4/2018 |
|------------------|----------|-----------|-----------|----------|----------|----------|


 Robert L. Metzger, Ph.D., C.H.P. 5/22/2018
 Date
 Laboratory License Number AZ0462



Radiation Safety Engineering, Inc.

3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121

Website: www.radsafe.com

(480) 897-9459

FAX (480) 892-5446

Isotopic Uranium Analysis

Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

Sampling Date: April 23, 2018

Sample Received: May 01, 2018

Uranium Analysis Date: May 21, 2018

| Sample No. | ^{238}U | ^{235}U | ^{234}U | Total | |
|------------|------------------|-------------------|-----------------------|----------------|-----------------------------|
| 18D0619-01 | 6.0 ± 0.6 | 0.280 ± 0.004 | 6.6 ± 0.6 | 12.9 ± 1.2 | Activity (pCi/L) |
| | 17.9 ± 1.7 | 0.131 ± 0.002 | 0.00106 ± 0.00010 | 18.0 ± 1.7 | Content ($\mu\text{g/L}$) |
| | Comments: | | | | |

Robert L. Metzger
Robert L. Metzger, Ph.D., C.H.P.

5/22/2018

Date

Laboratory License Number AZ0462

Arizona Department of Environmental Quality
Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report
 Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only

PWS ID#: AZ04

PWS Name: _____

April 23, 2018 15:55 (24 hour clock)

Sample Date

Sample Time

Owner/Contact Person

Owner/Contact Fax Number

Owner/Contact Phone Number

Sample Collection Point

☐ EPDS # _____**Compliance Sample Type:**☐

Reduced Monitoring

Date Q1 collected: _____

☐

Quarterly

Date Q2 collected: _____

☐

Composite of four quarterly samples

Date Q3 collected: _____

Date Q4 collected: _____

*****RADIOCHEMICAL ANALYSIS*****

>>>To be filled out by laboratory personnel<<<

*****Combined Uranium must be reported in micrograms per liter*****

| Analysis Method | MCL | Reporting Limit | Contaminant Name | Cont. Code | Analyses Run Date | Result | Exceed MCL |
|-----------------|----------|-----------------|---------------------------|------------|-------------------|-------------------|------------|
| | 15 pCi/L | | Adjusted Gross Alpha | 4000 | 5/21/2018 | 4.8 ± 1.5 | |
| 600/00-02 | | 3 pCi/L | Gross Alpha | 4002 | 5/2/2018 | 17.7 ± 0.9 | |
| 7500 - Rn | | | Radon | 4004 | | | |
| ASTM D6239 | 30 µg/L | 1 µg/L | Combined Uranium | 4006 | 5/21/2018 | 18.0 ± 1.7 µg/L | |
| | | | Uranium 234 | 4007 | 5/21/2018 | 0.00106 ± 0.00010 | |
| | | | Uranium 235 | 4008 | 5/21/2018 | 0.131 ± 0.002 | |
| | | | Uranium 238 | 4009 | 5/21/2018 | 17.9 ± 1.7 | |
| | 5 pCi/L | 1 pCi/L | Combined Radium (226,228) | 4010 | 5/4/2018 | 6.2 ± 0.5 | X |
| GammaRay HPGE | | 1 pCi/L | Radium 226 | 4020 | 5/4/2018 | 3.1 ± 0.3 | |
| GammaRay HPGE | | 1 pCi/L | Radium 228 | 4030 | 5/4/2018 | 3.1 ± 0.4 | |

*****LABORATORY INFORMATION*****

>>>To be filled out by laboratory personnel<<<

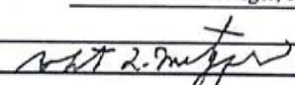
Specimen Number: RSE60312

Lab ID Number: AZ0462

Lab Name: Radiation Safety Engineering, Inc.

Printed Name and Phone Number of Laboratory Contact: Robert L. Metzger, Ph.D., C.H.P. (480) 897-9459

Comments: 18D0619-01

Authorized Signature: 

Date Public Water System Notified: _____

DWAR 6: 11/2007

SUBCONTRACT ORDER

Turner Laboratories, Inc.

18D0619

SENDING LABORATORY:

Turner Laboratories, Inc.
 2445 N. Coyote Drive, Ste #104
 Tucson, AZ 85745
 Phone: 520.882.5880
 Fax: 520.882.9788
 Project Manager: Kevin Brim

RECEIVING LABORATORY:

Radiation Safety Engineering, Inc.
 3245 N. Washington St.
 Chandler, AZ 85225-1121
 Phone : (480) 897-9459
 Fax: (480) 892-5446
 Please CC Kevin Brim Kbrim@turnerlabs.com

| Analysis | Expires | Laboratory ID | Comments |
|--|------------------|---------------|---|
| <hr/> | | | |
| Sample ID: 18D0619-01 Drinking Water Sampled: 04/23/2018 15:55 | | | |
| Radiochemistry, Gross Alpha | 10/20/2018 15:55 | | Analyze Uranium and Adjusted Alpha if G. Alpha is > 12 |
| Radiochemistry, Radium 226/228 | 05/23/2018 15:55 | | |
| Containers Supplied: | | | |

4160312

Released By

Date

Received By

Date

Released By

Date

Received By

Date

APPENDIX D

Well Completion Documentation

ESTIMATED ANNULAR MATERIAL RECORD

Project Name: FLC 111 Project #: 121647-007 Date: 11/4/17
 Well No.: R-02 Geologist: S. Hagedorn

ANNULAR VOLUME CALCULATIONS

Total Depth of Borehole [T]: 499.76 feet
 Borehole Diameter [D]: 20 inches
 Screen Length [L_s]: ~ feet
 Screen Diameter [d_s]: ~ inches
 Casing Length [L_c]: 500' feet
 Casing Diameter [d_c]: 14" inches

Total Cased Depth: 499.76 feet
 Rat Hole Volume [R=(D²-d²) 0.005454*L]: 0 Ft³
 Rat Hole Length [L]: 0 feet
 Camera Tube Length [L_{ct}]: ~ feet
 Camera Tube Diameter [d_{ct}]: ~ inches

Screen Annular Volume (A_s): (D²-d_s²) 0.005454 = ~ Ft³/Lin. Ft
 Casing Annular Volume (A_c): (D²-d_c²) 0.005454 = ~ Ft³/Lin. Ft
 Casing/Cam. Tube Annular Volume (A_{ct}): (D²-d_c²-d_{ct}²) 0.005454 = ~ Ft³/Lin. Ft

EQUATIONS

2,700 lbs. Silica Sand = 1 cubic yard = 27 cubic feet
 Bentonite Sack = 0.69 ft³
 Silica Sand Super Sack = 3000 lbs.
 1 Volume of bag (Ft³) = bag weight/100
 2 Calculated depth = Previous Calculated depth - (v/A)

| No. | ✓ | Weight of Bag (lbs.) | Volume of Bag ¹ (v) (ft ³) | Total Vol. of Bags (ft ³) | Calculated Depth ² (ft bls) | Tagged Depth (ft bls) | Comments |
|-----|---|----------------------|---|---------------------------------------|--|-----------------------|---------------------|
| 1 | ✓ | ~ | ~ | 670.5 | -104 | 0 | Type II/S, 14.5 bag |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Total barrels pumped: 114
 Type V = 14.4 - 14.9
 580 sacks
 670.5 ft³

45 gal barrels
 42
 5000

K:\Templates\Field Forms\Well Inst. & Testing Forms.xls
 5.8% over caliper calculated Volume.

HALEX ALDRICH

PIPE TALLY

| | |
|------------------------|-------------------------------|
| Project Name: FCI-PTF | Project No.: 129687-007 |
| Well No.: R-02 | Date: 1/26/13 |
| Location: Florence, AZ | Pipe Tally for: Lower |
| Total Depth: | Geologist: S Hensel / C Price |

Type of Connections: ☐ Welded ☐ T+C ☒ Flush Thread ☐ Other

| Pipe | ✓ | Length (ft) | Length Σ (ft) | Pipe Type | Dist. from sensor bottom to bottom of pipe (feet) | Sensor Type (ACD, CS, ERT) | Sensor ID | Wire Lead ID | Depth of Sensor (feet bgs) |
|------|---|-------------|---------------|-------------------|---|----------------------------|-----------|--------------|----------------------------|
| 1 | ✓ | 0.36 | 0.36 | S.S. End Cap | | | | | |
| 2 | * | 20.02 | 20.35 | Sch 80 PVC Screen | | | | | |
| 3 | ✓ | 20.02 | 40.37 | | | | | | |
| 4 | * | 20.01 | 60.34 | | 11.86 | ERT | 12 | 12 | 1169.82 |
| 5 | ✓ | 20.02 | 80.40 | | | | | | |
| 6 | * | 20.03 | 100.43 | | 8.35 | ERT | 11 | 11 | 1113.28 |
| 7 | ✓ | 20.01 | 120.44 | | | | | | |
| 8 | * | 20.04 | 140.48 | | | | | | |
| 9 | ✓ | 20.02 | 160.50 | | 8.24 | ERT | 10 | 10 | 1053.31 |
| 10 | * | 20.04 | 180.54 | | | | | | |
| 11 | ✓ | 20.04 | 200.58 | | | | | | |
| 12 | * | 20.04 | 220.62 | | 8.31 | ERT | 9 | 9 | 993.14 |
| 13 | ✓ | 20.04 | 240.66 | | | | | | |
| 14 | * | 20.05 | 260.71 | | | | | | |
| 15 | ✓ | 20.03 | 280.74 | | 8.35 | ERT | 8 | 8 | 932.97 |
| 16 | * | 20.03 | 300.77 | ↓ | | | | | |
| 17 | ✓ | 20.01 | 320.78 | Sch 80 PVC Blank | | | | | |
| 18 | * | 20.03 | 340.81 | Sch 80 PVC Screen | 8.40 | ERT | 7 | 7 | 872.85 |
| 19 | ✓ | 20.02 | 360.83 | | | | | | |
| 20 | * | 20.03 | 380.86 | | | | | | |
| 21 | ✓ | 20.04 | 400.90 | | 8.41 | ERT | 6 | 6 | 812.76 |
| 22 | * | 20.03 | 420.93 | | | | | | |
| 23 | ✓ | 20.03 | 440.96 | | | | | | |
| 24 | * | 20.02 | 460.98 | | 8.39 | ERT | 5 | 5 | 752.68 |
| 25 | ✓ | 20.03 | 481.01 | | | | | | |
| 26 | * | 20.04 | 501.05 | | | | | | |
| 27 | ✓ | 20.04 | 521.09 | | 8.41 | ERT | 4 | 4 | 692.57 |
| 28 | * | 20.04 | 541.13 | ↓ | | | | | |
| 29 | ✓ | 20.02 | 561.15 | Sch 80 PVC Blank | | | | | |
| 30 | * | 20.04 | 581.19 | Sch 80 PVC Screen | 3.00 | Trans | 1 | 1 | 637.82 |
| | | | | | 8.41 | ERT | 3 | 3 | 632.47 |

Endcap - 0.36' plus 0.65' cone guard on bottom

| SUMMARY OF TALLY | |
|---------------------------|---------|
| Total Length tallied: | 1203.66 |
| Casing Stick-Up: | 1.60 |
| Length of Casing Cut-Off: | 0 |
| Bottom of Well: | 1202.06 |
| Screened Interval: | |
| Total Screen in Hole: | |

Sensor Types: Annular Conductivity Device (ACD), installed as pairs with 3 ft spacing
Conductivity Sensor (CS) 4 sensors with sing lead 20 ft spacing
Electrical Resistivity Tomography (ERT)

Centrifugizer on pipe

Stickup = 4.79'

0.03 to tally for Endcap, talked as 0.33, is 0.36'

HALEY
ALDRICH

PIPE TALLY

| | |
|------------------------|------------------------------------|
| Project Name: FCI-PTF | Project No.: 129687-007 |
| Well No.: R-02 | Date: 5/26/18 |
| Location: Florence, AZ | Pipe Tally for: Lower |
| Total Depth: | Geologist: S Hensel / KE / C Price |

Type of Connections: ☐ Welded ☐ T+C ☒ Flush Thread ☐ Other

| Pipe | ✓ | Length (ft) | Length Σ (ft) | Pipe Type | Dist. from sensor bottom to bottom of pipe (feet) | Sensor Type (ACD, CS, ERT) | Sensor ID | Wire Lead ID | Depth of Sensor (feet bgs) |
|------|---|-------------|---------------|--------------------------|---|----------------------------|-----------|--------------|----------------------------|
| 31 | ✓ | 26.04 | 601.23 | Sh Sh PVC Screen | | | | | |
| 32 | * | 20.05 | 621.28 | | | | | | |
| 33 | ✓ | 20.05 | 641.33 | | 8.47 | ERT | 2 | 2 | 572.28 |
| 34 | * | 20.04 | 661.37 | | | | | | |
| 35 | ✓ | 20.02 | 681.39 | | | | | | |
| 36 | ✓ | 0.5 | 681.89 | PVC → Fiberglass adapter | | | | | |
| 37 | * | 28.95 | 710.84 | Fiberglass | 8.01 | ERT | 1 | 1 | 512.13 |
| 38 | * | 28.95 | 739.79 | | | | | | |
| 39 | ✓ | 28.95 | 768.74 | | | | | | |
| 40 | * | 28.97 | 797.71 | | | | | | |
| 41 | * | 28.95 | 826.66 | | | | | | |
| 42 | * | 28.97 | 855.63 | | | | | | |
| 43 | ✓ | 28.99 | 884.62 | | | | | | |
| 44 | * | 28.79 | 913.41 | | | | | | |
| 45 | * | 28.14 | 942.55 | | | | | | |
| 46 | * | 29.00 | 971.55 | | | | | | |
| 47 | ✓ | 28.99 | 1000.54 | | | | | | |
| 48 | * | 29.00 | 1029.54 | | | | | | |
| 49 | * | 28.95 | 1058.49 | | | | | | |
| 50 | * | 29.13 | 1087.62 | | | | | | |
| 51 | ✓ | 29.12 | 1116.74 | | | | | | |
| 52 | * | 28.98 | 1145.72 | | | | | | |
| 53 | * | 28.97 | 1174.69 | | | | | | |
| 54 | * | 28.94 | 1203.63 | | | | | | |
| 55 | ✓ | 4.39 | | Pipe Joint | ← will be removed | | | | |
| 56 | | | | | | | | | |
| 57 | | | | | | | | | |
| 58 | | | | | | | | | |
| 59 | | | | | | | | | |
| 60 | | | | | | | | | |

Notes:

SUMMARY OF TALLY

Total Length tallied:

Casing Stick-Up:

Length of Casing Cut-Off:

Bottom of Well:

Screened Interval:

Total Screen in Hole:

Sensor Types:

Annular Conductivity Device (ACD), installed as pairs with 3 ft spacing

Conductivity Sensor (CS) 4 sensors with sing lead 20 ft spacing

Electrical Resistivity Tomography (ERT)

HALEY
ALDRICH

Casing Layout

| | | | |
|-----------------------|---------------------|---------------------|--------------|
| Project Name.: | Florence Copper INC | Project No.: | 129687-007 |
| Well No.: | R-02 | Date: | 1.27.18 |
| Location: | Florence AZ | Layout for: | Well Install |
| Total Depth: | | Geologist: | C Price |

| Pipe Length | | Depth BGS | Pipe Length | | Depth BGS | Pipe Length | | Depth BGS |
|-------------|----|-----------|-------------|----|-----------|-------------|----|-----------|
| | | 761.07 | | | 230.48 | | | |
| 20.03 | 23 | 781.10 | 29.00 | 46 | 259.48 | | 69 | |
| 20.03 | 22 | 801.13 | 29.14 | 45 | 288.62 | | 68 | |
| 20.04 | 21 | 821.17 | 28.79 | 44 | 317.41 | | 67 | |
| 20.03 | 20 | 841.20 | 28.99 | 43 | 346.40 | | 66 | |
| 20.02 | 19 | 861.22 | 28.97 | 42 | 375.37 | | 65 | |
| 20.03 | 18 | 881.25 | 28.95 | 41 | 404.32 | | 64 | |
| 20.01 | 17 | 901.26 | 28.97 | 40 | 433.29 | | 63 | |
| 20.03 | 16 | 921.29 | 28.95 | 39 | 462.24 | | 62 | |
| 20.03 | 15 | 941.32 | 28.95 | 38 | 491.19 | | 61 | |
| 20.05 | 14 | 961.37 | 28.95 | 37 | 520.14 | | 60 | |
| 20.04 | 13 | 981.41 | 0.50 | 36 | 520.64 | | 59 | |
| 20.04 | 12 | 1001.45 | 20.02 | 35 | 540.66 | | 58 | |
| 20.04 | 11 | 1021.49 | 20.04 | 34 | 560.70 | | 57 | |
| 20.04 | 10 | 1041.53 | 20.05 | 33 | 580.75 | | 56 | |
| 20.02 | 9 | 1061.55 | 20.05 | 32 | 600.80 | 4.39 | 55 | -5.99 |
| 20.04 | 8 | 1081.59 | 20.04 | 31 | 620.84 | 28.94 | 54 | -1.60 |
| 20.01 | 7 | 1101.60 | 20.04 | 30 | 640.88 | 28.97 | 53 | 27.34 |
| 20.03 | 6 | 1121.63 | 20.02 | 29 | 660.90 | 28.98 | 52 | 56.31 |
| 20.02 | 5 | 1141.65 | 20.04 | 28 | 680.94 | 29.12 | 51 | 85.29 |
| 20.01 | 4 | 1161.66 | 20.04 | 27 | 700.98 | 29.13 | 50 | 114.41 |
| 20.02 | 3 | 1181.68 | 20.04 | 26 | 721.02 | 28.95 | 49 | 143.54 |
| 20.02 | 2 | 1201.70 | 20.03 | 25 | 741.05 | 29.00 | 48 | 172.49 |
| 0.36 | 1 | 1202.06 | 20.02 | 24 | 761.07 | 28.99 | 47 | 201.49 |
| | | | | | | | | 230.48 |

| Sensor Type | Sensor ID | Pipe # | Distance from Bottom of Sensor to Bottom of Pipe | Depth of Sensor (BGS) |
|-------------|-----------|--------|--|-----------------------|
| ERT | 12 | 3 | 11.86 | 1169.82 |
| ERT | 11 | 6 | 8.35 | 1113.28 |
| ERT | 10 | 9 | 8.24 | 1053.31 |
| ERT | 9 | 12 | 8.31 | 993.14 |
| ERT | 8 | 15 | 8.35 | 932.97 |
| ERT | 7 | 18 | 8.40 | 872.85 |
| ERT | 6 | 21 | 8.41 | 812.76 |
| ERT | 5 | 24 | 8.39 | 752.68 |
| ERT | 4 | 27 | 8.41 | 692.57 |
| ERT | 3 | 30 | 8.41 | 632.47 |
| ERT | 2 | 33 | 8.47 | 572.28 |
| ERT | 1 | 37 | 8.01 | 512.13 |
| Trans | 1 | 30 | 3.06 | 637.82 |
| | | | | #REF! |
| | | | | #REF! |
| | | | | #REF! |

| Pipe Number | Type |
|-------------|-----------------------------------|
| 1 | SS End Cap |
| 2 - 16 | PVC SCH 80 Screen 0.080 |
| 17 | PVC SCH 80 Blank |
| 18 - 28 | PVC SCH 80 Screen 0.080 |
| 29 | PVC SCH 80 Blank |
| 30 - 35 | PVC SCH 80 Screen 0.080 |
| 36 | SS PVC - Fiberglass Transition |
| 37 - 54 | Fiberglass |
| 55 | <i>Fiberglass/For Landing!!!!</i> |

Notes: Fiberglass joint for landing, pipe #55, 4.39' without coupler, 2 threads in on both ends. Stickup of deck, beam, plate, and elevator above surface casing = 5.99'. Top of Permanent FRP will be 1.78' above surface casing, 0.36' higher than target.

ESTIMATED ANNULAR MATERIAL RECORD

| | | |
|--------------------------|--|----------------------|
| Project Name: <u>FCI</u> | Project #: <u>120687-007</u> | Date: <u>1-28-18</u> |
| Well No.: <u>R-02</u> | Geologist: <u>C. Prier & S. Hensel</u> | |

ANNULAR VOLUME CALCULATIONS

Total Depth of Borehole [T]: 1244 feet

Borehole Diameter [D]: 12 1/4 inches

Screen Length [L_s]: 556 feet

Screen Diameter [d_s]: 556 inches

Casing Length [L_c]: 520.64 feet

Casing Diameter [d_c]: 544 inches

Screen Annular Volume (A_s): (D²-d_s²) 0.005454 = 0.65 Ft³/Lin. Ft

Casing Annular Volume (A_c): (D²-d_c²) 0.005454 = 0.64 Ft³/Lin. Ft

Casing/Cam. Tube Annular Volume (A_{c+cd}): (D²-d_c²-d_{cd}²) 0.005454 = Ft³/Lin. Ft

ANNULAR VOLUME CALCULATIONS

Total Cased Depth: 1202.06 feet

Rat Hole Volume [R=(D²-0.005454*L_c): 41.94 feet³

Rat Hole Length [L]: 41.94 feet

Camera Tube Length [L_{cd}]: feet

Camera Tube Diameter [d_{cd}]: inches

EQUATIONS

2,700 lbs. Silica Sand = 1 cubic yard = 27 cubic feet

¹ Volume of bag (Ft³) = bag weight/100

² Calculated depth = Previous Calculated depth - (V/A)

Bentonite Sack = 0.69 ft³

Silica Sand Super Sack = 3000 lbs.

* calculated depth estimated using caliper log
 x1 After 3 logs
 ① Tagged after 1/2 log @ 958'

1129



| ESTIMATED ANNULAR MATERIAL RECORD (Continued) | | | | | | | |
|---|---|-------------------------|---|--|--|-----------------------|---|
| Project Name: FCI | | Project No.: 129687-307 | | Geologist: D. MUNKER/SEE/C. PRICE/S HENSEL | | | |
| Well No.: R-02 | | Date: 4/29/18- | | | | | |
| No. | ✓ | Weight of Bag (lbs.) | Volume of Bag ¹ (v) (ft ³) | Total Vol. of Bags (ft ³) | Calculated Depth ² (ft bls) | Tagged Depth (ft bls) | Comments |
| 7 | ✓ | 750 | 7.5 | 19.5 | 899 | 906 | #6 filter pack bag 7 - Tremmie |
| 8 | ✓ | - | 6.565 | 19.6.3 | 2015 | 898 | #6 silica, bag 7 - 891 |
| - | - | - | - | - | - | 906 | Swab, 1200-1100, 15 min |
| - | - | - | - | - | - | 906 | Swab 1195-1100 10 min |
| - | - | - | - | - | - | 908 | Swab 1100-1000 15 min |
| - | - | - | - | - | - | 918 | Swab 1100-1000 10 min |
| 9 | ✓ | 666.67 | 0.67 | 207.5 | 898.6 | 891 | #6 gravel 5 gal bucket x 9 |
| - | - | - | - | - | - | 893.5 | gravel 1000-900 30 min |
| - | - | - | - | - | - | 893 | Swab 1000-900 |
| - | - | - | - | - | - | 893 | Swab 1200-900 |
| 10 | ✓ | 50 | 0.5 | 212 | 886 | 885 | #60 silica sand 50 lbs bag x 9 |
| 11 | ✓ | 1000 | 10 | 222 | 873 | - | #6 silica pack 1/3 bag 7 |
| 12 | ✓ | 3000 | 30 | 252 | 847 | 828 | #6 silica pack bag 8 - 859 / 828 |
| 13 | ✓ | 1500 | 15 | 267 | 802 | 825 | #6 filter pack took tremmie out to re-tag depth due to |
| 13 | ✓ | 1500 | 15 | 282 | 740 | 786 | 1/2 #6 filter then tag + pull joint → then finish bag + tag |
| 14 | ✓ | 1500 | 15 | 297 | 740 | - | 1/2 #6 filter then tag + pull joint |
| 14 | ✓ | 1500 | 15 | 312 | 727 | 750 | add another 1/2 #6 filter and then pulling joint |
| 15 | ✓ | 1500 | 15 | 327 | 700 | 729 | add 1/2 #6 filter and pulled joint → tremmie 6908 |
| 15 | ✓ | 1500 | 15 | 342 | 672 | 695 | add 1/2 #6 bag " " → 677 - tremmie pipe |
| 16 | ✓ | 1500 | 15 | 357 | 656 | 665 | " 647 tremmie pulled one more joint |
| 16 | ✓ | 1500 | 15 | 372 | 656 | 656 | adding 10 buckets to |
| 17 | ✓ | 1500 | 15 | 387 | 655 | 656 | #6 gravel 10 buckets |
| Notes: | | | | | | | |

* calculated depth using caliper log

154 = 7.48 gal

HALLEY ALBRICH

ESTIMATED ANNULAR MATERIAL RECORD (Continued)

Project Name: FC1 Project No.: 129687-007 Geologist: S. Price, M. Hensman
 Well No.: R-02 Date: 1/30/18

| No. | ✓ | Weight of Bag (lbs.) | Volume of Bag (V) (ft³) | Total Vol. of Bags (ft³) | Calculated Depth² (ft bls) | Tagged Depth (ft bls) | Comments |
|-----|---|----------------------|-------------------------|--------------------------|----------------------------|-----------------------|--|
| — | — | — | — | — | — | — | swab from 880-760 15 min |
| — | — | — | — | — | — | 657 | swab from 880-760 10 min |
| — | — | — | — | — | — | 658 | swab from 760-660 15 min |
| — | — | — | — | — | — | 658 | swab from 760-660 10 min |
| 18 | ✓ | 66.67 | 1.3 | 349.1 | 656 | 656 | going to add 2 buckets #6 to bring up to 656 |
| 19 | ✓ | 66.67 | 0.47 | 353.55 | 656 | 656 | #6 filter pack 1 bag bucket 55 x 3 64 test run |
| — | — | — | — | 351.91 | — | — | swab from 880-660 30 mins |
| — | — | — | — | — | — | 651 | swab from 880-660 30 mins |
| — | — | — | — | — | — | 650 | swab from 880-660 30 mins |
| 20 | — | 50 | 0.5 | 359.41 | 646 | 1011 | #60 silica sand 50 lbs 5 bags Teepee 642 |
| 21 | — | 3000 | 30 | 389.41 | — | 1007 | #6 gravel 1 bag + tag Teepee 642 |
| 22 | — | 3000 | 30 | 414 | 805 | 907 | #6 gravel 1 bag + tag |
| 23 | — | 3000 | 30 | 444 | 921 | — | #6 gravel 1 bag |
| 24 | — | 3000 | 30 | 474 | 875 | 897 | #6 gravel bag |
| 25 | — | 3000 | 30 | 504 | 851 | — | #6 gravel bag |
| 26 | — | 3000 | 30 | 534 | 805 | 822 | #6 gravel bag |
| 27 | — | 3000 | 30 | 564 | 776 | — | #6 gravel bag |
| 28 | — | 3000 | 30 | 594 | 730 | 743 | #6 gravel bag |
| 29 | — | 3000 | 30 | 624 | 697 | 705 | #6 " |
| 30 | — | 1500 | 15 | 639 | 682 | 698 | 11 |
| 31 | — | 1500 | 15 | 654 | 659 | 678 | 1/2 #6 gravel to bring it close to 656 then will add buckets |
| 32 | — | 750 | 7.5 | 561.91 | 666.5 | 668 | 1/2 #6 filter pack to 666.5 |

Notes:

656' Tary et
-12'

HALEY ALBRICH

ESTIMATED ANNULAR MATERIAL RECORD (Continued)

Project Name: FC1 Project No.: 129687-007 Geologist: D. Moore
 Well No.: R-02 Date: 11/31/16

| No. | ✓ | Weight of Bag (lbs.) | Volume of Bag ¹ (v) (ft ³) | Total Vol. of Bags (ft ³) | Calculated Depth ² (ft bls) | Tagged Depth (ft bls) | Comments |
|-----|---|----------------------|---|---------------------------------------|--|-----------------------|--|
| 33 | | 800 | 8 | 557.91 | 656 | 657 | add 12 buckets #6 filter pack Swab 1200-1100 10 min |
| | | | | | | | Swab 1100-1000 10 min |
| | | | | | | | Swab 1000-900 10 min |
| | | | | | | | Swab 900-800 10 min |
| | | | | | | | Swab 800-700 10 min tag 664' |
| | | | | | | | add 9 buckets #6 filter pack |
| 34 | | 666.7 | 0.67 | 575.94 | 656 | 658 | Swab 700-660 tag - 658' |
| | | | | | | | add 2 buckets #6 gravel |
| 35 | | 666.7 | 1.3 | 577.24 | 650 | 653 | add 9 bags #60 sand |
| 36 | | 500 | 4.5 | 581.74 | | 654 | waited for sand to settle for another 30 min |
| | | | | | | 654 | " waiting another 10-15 min |
| | | | | | | 654 | Adding 8 bags #60 sand |
| | | 501.67 | 0.5 | | 646 | 646 | Adding 2 #6 bags gravel pulling 2 joints |
| 37 | | 3000 | 30 | | 600 | | and then tagging |
| 38 | | 3000 | 30 | | 554 | 580 | Adding #6 bag and see how close to 515' |
| 39 | | 3000 | 30 | | 534 | 548 | add 1/2 #6 + tag |
| 40 | | 1500 | 15 | | 525 | 538 | add other half # tag to get to 515' |
| | | 1500 | 15 | 705.24 | 515 | 505 | going to swab to depth will hopefully go down |
| | | | | | 505 | 508 | Swab 10 min 640-520 |
| | | | | | | 521 | Adding 6 buckets of #6 gravel |
| | | 666.67 | 1.3 | | 515 | 491 | Tremmie was @ 490 → pulled tremmie + tagged again |
| | | | | | | 494 | |

Notes:

barrel 242 gal = cubic ft
 7.48

Geologist: D. Morse

Project No.: 129687-007

Project Name: FC1

Date: 2/1/18

[illegible]

Notes: 01/11/18 13.15 - Basic on site

Travis

Shirley D. D. D.

ESTIMATED ANNULAR MATERIAL RECORD

| | | | | | |
|----------------------------|--|-------------------------------|--|----------------------|--|
| Project Name: <u>FLC-1</u> | | Project #: <u>12767-007</u> | | Date: <u>11/4/17</u> | |
| Well No.: <u>R-02</u> | | Geologist: <u>S. Hagedorn</u> | | | |

ANNULAR VOLUME CALCULATIONS

Total Depth of Borehole [T]: 499.76 feet

Borehole Diameter [D]: 20 inches

Screen Length [L_s]: - feet

Screen Diameter [d_s]: - inches

Casing Length [L_c]: 500' feet

Casing Diameter [d_c]: 14" inches

Total Cased Depth: 499.76 feet

Rat Hole Volume [R=(D²) 0.005454*L_r]: 0 Ft³

Rat Hole Length [L_r]: 0 feet

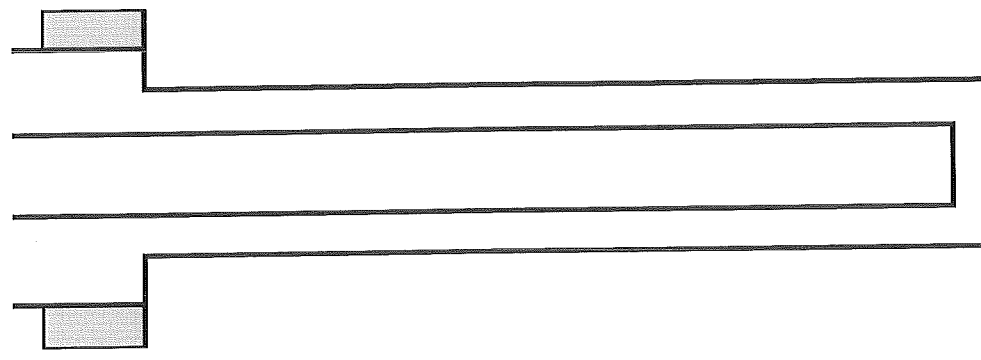
Camera Tube Length [L_d]: - feet

Camera Tube Diameter [d_d]: - inches

Screen Annular Volume (A_s): (D²-d_s²) 0.005454 = (400-196)0.005454 = 1.11 Ft³/Lin. Ft

Casing Annular Volume (A_c): (D²-d_c²) 0.005454 = (400-196)0.005454 = 1.11 Ft³/Lin. Ft

Casing/Cam. Tube Annular Volume (A_{c+cd}): (D²-d_c²-d_{cd}²) 0.005454 = - Ft³/Lin. Ft



EQUATIONS

2,700 lbs. Silica Sand = 1 cubic yard = 27 cubic feet

1 Volume of bag (Ft³) = bag weight/100

2 Calculated depth = Previous Calculated depth - (V/A)

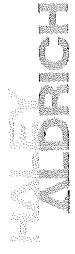
| No. | ✓ | Weight of Bag (lbs.) | Volume of Bag ¹ (V) (ft ³) | Total Vol. of Bags (ft ³) | Calculated Depth ² (ft bls) | Tagged Depth (ft bls) | Comments |
|-----|---|----------------------|---|---------------------------------------|--|-----------------------|--------------------|
| 1 | ✓ | - | - | 670.5 | -104 | 0 | Type II / 14.5 bag |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

23.47 5/163
633.7 5/163
4740 gal
105 barrels

45 gal barrels
42
50000

Total barrels pumped: 114
Type V = 14.4 - 14.9
580 sacks
670.5 5/163

K:\Templates\Field Forms\Well Inst & Testing Forms.xls
5.8% over caliper calculated Volume.



⊗

| | | | | | |
|-----------------------|-----|--------------|--------------------|------|-----------|
| Equipment # | HRS | 580 SKI | Handling & Dumping | 2.44 | 1415.20 |
| 28983 | | | Mileage 8 hrs | | 1200.- |
| 84126-4544 | | | Sub Total | | 17,746.20 |
| Vop | | | Discount | | |
| 30463-37547 | | not included | Sales Tax | | |
| Signature of operator | | | Total | | |

410.85713



BASIC
ENERGY SERVICES

3451 LeTourneau
Gillette, WY 82718
307-682-5258

Cementing Ticket

No. 1719

21372

| | | | | | | | | |
|----------|--------------------|-------|------|-------|------------------|-------------|-----------|---------------|
| Date | Customer Order No. | Sect. | Twp. | Range | Truck Called Out | On Location | Job Began | Job Completed |
| 02-02-18 | | | | | 00:00 | 00:30 | 8:30 | 10:00 |

| | | | | | |
|-------|----------------------|------------|-----------------|-----------|------------|
| Owner | Florance Copper Mine | Contractor | Hydro Resources | Charge To | Hydro West |
|-------|----------------------|------------|-----------------|-----------|------------|

| | | |
|-----------------|------|-------|
| Mailing Address | City | State |
|-----------------|------|-------|

| | | | | | | | |
|-----------------|------|-------|-------------|--------|-------|-------|----|
| Well No. & Form | R 02 | Place | copper mine | County | Pinal | State | AZ |
|-----------------|------|-------|-------------|--------|-------|-------|----|

| | | | | |
|------------------------------|--------------|---|--|--|
| Depth of Well 1205 | Depth of Job | Casing (New) Size 5.5 (Used) Weight | Size of Hole Amt. and Kind of Cement 14 | (Cement Left) in casing by Request Necessity 0 feet |
|------------------------------|--------------|---|--|--|

| | | |
|-----------------|-----------------------------|-----------------|
| Kind of Job | Drillpipe _____ (Rotary) | Truck No. _____ |
| Monitoring Well | Tubing <u>2 7/8</u> (Cable) | 28983 |

| | |
|--------------------------------|---|
| Price Reference No. _____ | Remarks |
| Price of Job <u>1210</u> | safety meeting held |
| Second Stage _____ | rig up to tubing with hose and valve |
| Pump Truck Mileage <u>3825</u> | pump 5 bbls to clear tubing |
| P.U. Mileage <u>765</u> | pump and mix 350 sks type 2/5 cement |
| Other Charges _____ | displace .5 bbl thru mixer |
| Total Charges <u>5,800.00</u> | rig down from tubing |
| | wash up in cellar |
| | good cement to surface |
| | THANK YOU |

| | | | | | | | | | |
|----------|----------------------|------------|-------------|----------|-------------|------------|------------|----|-----------|
| Cementer | Bryan Hammond | Lead Yield | 1.38 | Lead Wt. | 14.6 | Lead Water | 6.8 | SV | 84 |
|----------|----------------------|------------|-------------|----------|-------------|------------|------------|----|-----------|

Helper Daniel Johnson Tail Yield _____ Tail Wt. _____ Lead Water _____ SV _____

District Gillette State Wy

The above job was done under supervision of the owner, operator, or his agent whose signature appears below.

Agent of contractor or operator

Sales Ticket for Materials Only

| QUANTITY SACKS | BRAND AND TYPE | PRICE | TOTAL |
|-----------------------|-------------------------|------------------------|-------------|
| 16 | Crew subsistence | 500 | 8,000.00 |
| 12 | Transportaton of cement | 150 | 1,800.00 |
| | | | 0.00 |
| | | | 0.00 |
| | | | 0.00 |
| | P.O. # 152614 | | 0.00 |
| | | | 0.00 |
| | | | 0.00 |
| | | | 0.00 |
| | | | 0.00 |
| | | | 0.00 |
| | | | 0.00 |
| | | | 0.00 |
| Plugs | | | 0.00 |
| Equipment# | HRS | 350 Handling & Dumping | 2.44 854.00 |
| 28983 | 1.5 | Mileage | 0.00 |
| 84127 | 1 | Sub Total | 16,454.00 |
| | | Discount | |
| | | Sales Tax | |
| Signature of operator | | Total | |

APPENDIX E

Geophysical Logs



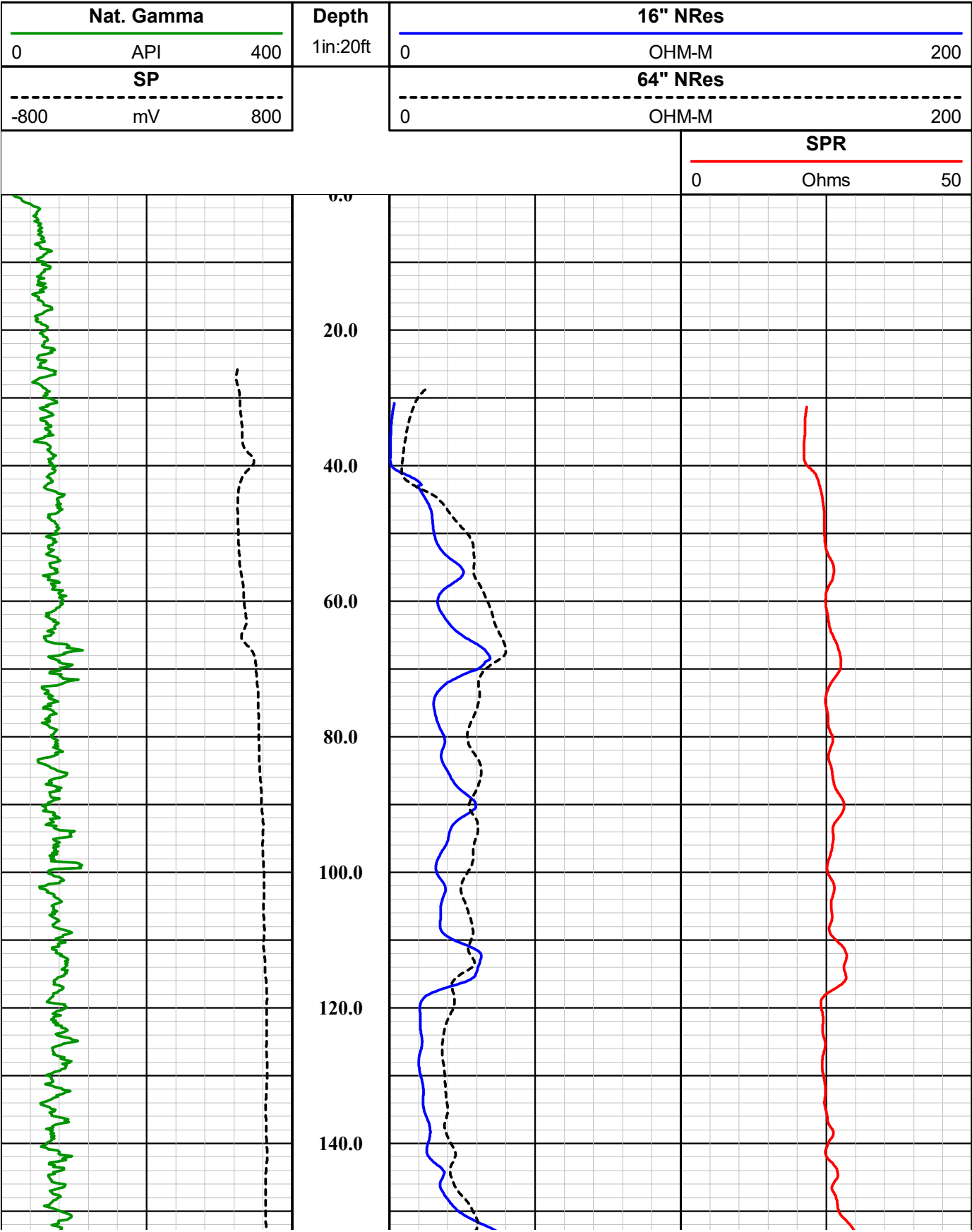
Southwest Exploration Services, LLC

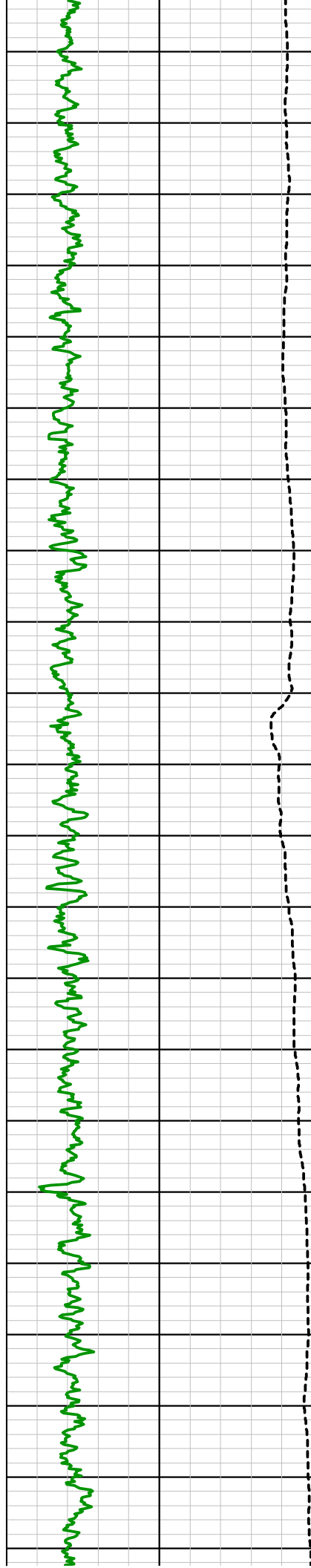
borehole geophysics & video services

| | | | | | | | | | | |
|---|--|--|--------------------|--|---------------------------|--|------------------------|--|------------------------|--|
| COMPANY FLORENCE COPPER | | | | | | | | | | |
| WELL ID R-02 | | | | | | | | | | |
| FIELD FLORENCE COPPER | | | | | | | | | | |
| COUNTY PINAL STATE ARIZONA | | | | | | | | | | |
| TYPE OF LOGS: E-LOG MORE: NAT. GAMMA | | | | | | | | | | |
| LOCATION | | | | | | | | | | |
| OTHER SERVICES 3-ARM CALIPER TEMPERATURE FLUID RESISTIVITY SONIC DEVIATION | | | | | | | | | | |
| PERMANENT DATUM | | | SEC | | TWP | | RGE | | ELEVATION | |
| LOG MEAS. FROM | | | GROUND LEVEL | | ABOVE PERM. DATUM | | D.F. | | K.B. | |
| DRILLING MEAS. FROM | | | GROUND LEVEL | | G.L. | | MUD | | D.F. | |
| DATE | | | 11-4-17 / 1-26-18 | | TYPE FLUID IN HOLE | | MUD | | MUD | |
| RUN No | | | 1 & 3 | | MUD WEIGHT | | N/A | | N/A | |
| TYPE LOG | | | E-LOG - NAT. GAMMA | | VISCOSITY | | N/A | | N/A | |
| DEPTH-DRILLER | | | 1244 FT. | | LEVEL | | FULL | | FULL | |
| DEPTH-LOGGER | | | 1236 FT. | | MAX. REC. TEMP. | | 24.30 DEG. C | | 24.30 DEG. C | |
| BTM LOGGED INTERVAL | | | 1236 FT. | | IMAGE ORIENTED TO: | | N/A | | N/A | |
| TOP LOGGED INTERVAL | | | SURFACE | | SAMPLE INTERVAL | | 0.2 FT. | | 0.2 FT. | |
| DRILLER / RIG# | | | HYDRO RESOURCES | | LOGGING TRUCK | | TRUCK #200 / #900 | | TRUCK #200 / #900 | |
| RECORDED BY / Logging Eng. | | | A. OLSON | | TOOL STRING/SN | | GEOVISTA E-LOG SN 4790 | | GEOVISTA E-LOG SN 4790 | |
| WITNESSED BY | | | SAM - H&A | | LOG TIME:ON SITE/OFF SITE | | 5:20 A.M. | | 5:20 A.M. | |
| BOREHOLE RECORD | | | | | | | | | | |
| CASING RECORD | | | | | | | | | | |
| NO. BIT FROM TO SIZE WGT. FROM TO | | | | | | | | | | |
| 1 7 IN. SURFACE 40 FT. 24 IN. STEEL SURFACE 40 FT. | | | | | | | | | | |
| 2 20 IN. 40 FT. 500 FT. 14 IN. STEEL SURFACE 500 FT. | | | | | | | | | | |
| 3 12 1/4 IN. 500 FT. TOTAL DEPTH | | | | | | | | | | |
| COMMENTS: | | | | | | | | | | |

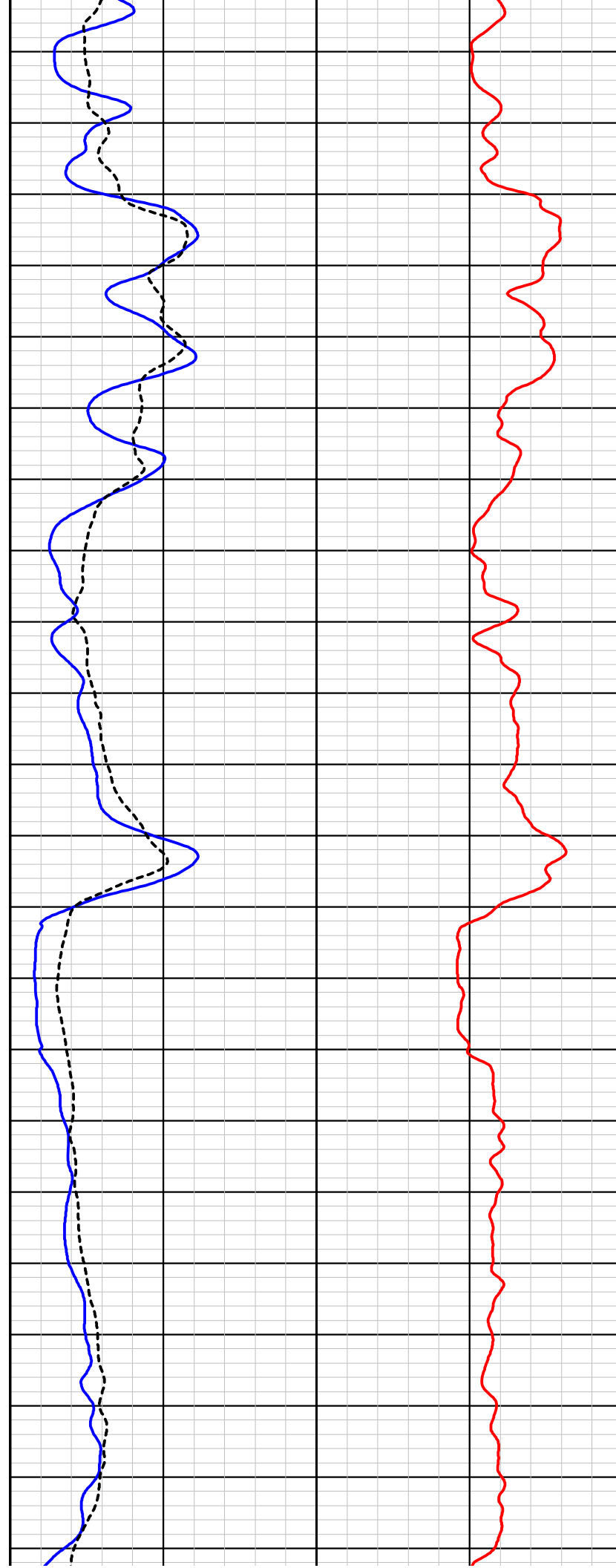
Disclaimer:

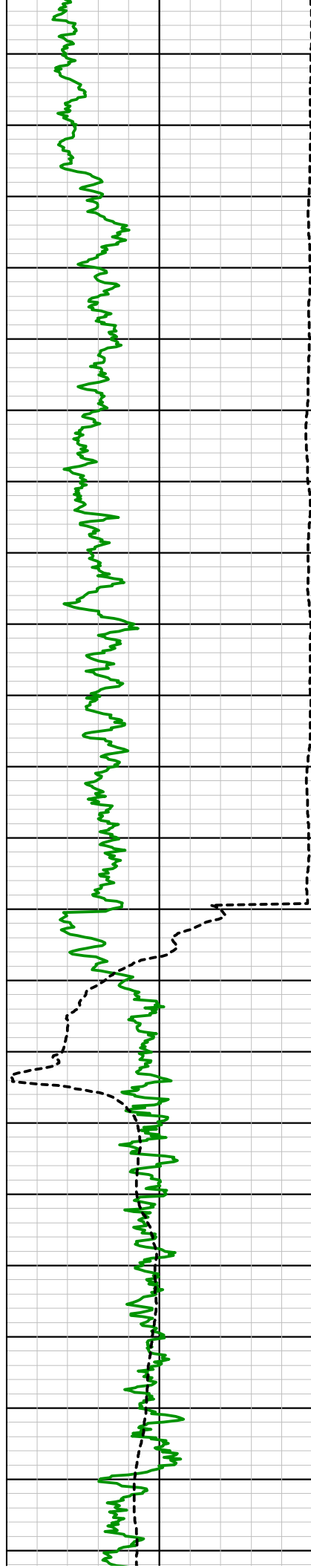
All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.





160.0
180.0
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0





380.0

400.0

420.0

440.0

460.0

480.0

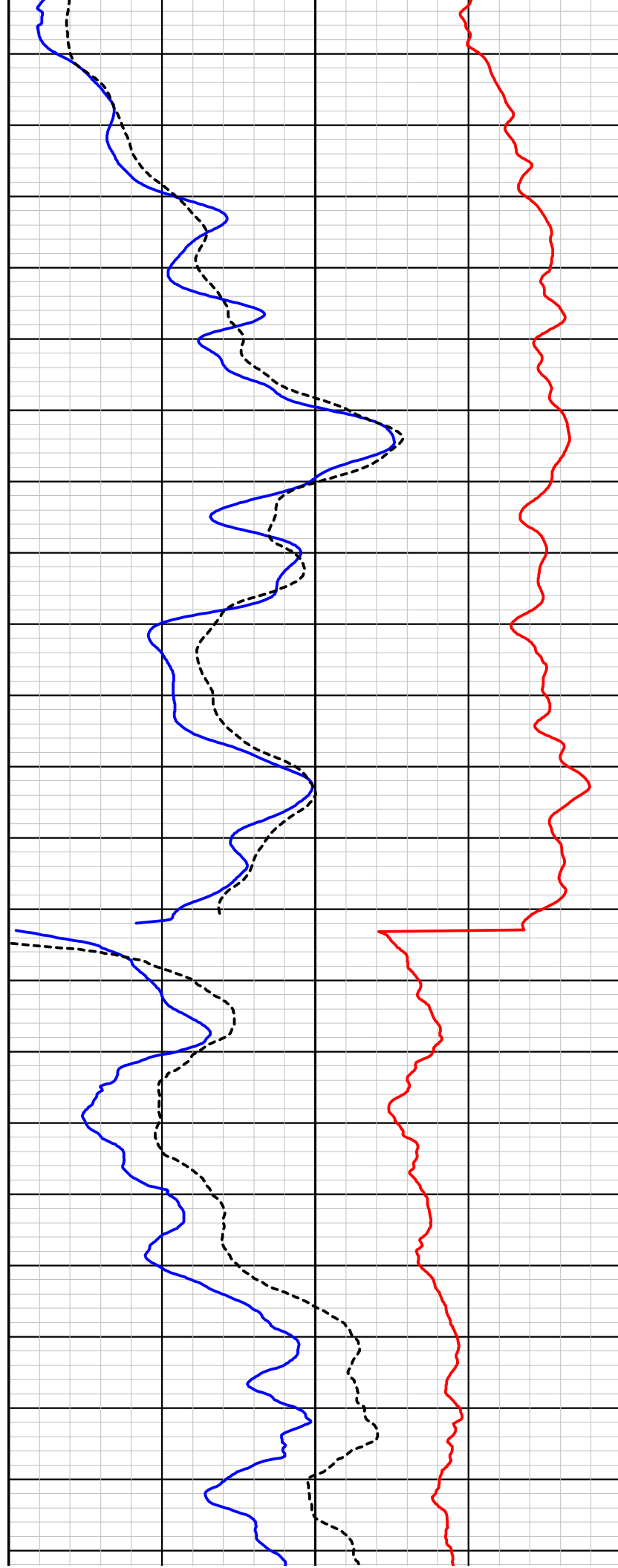
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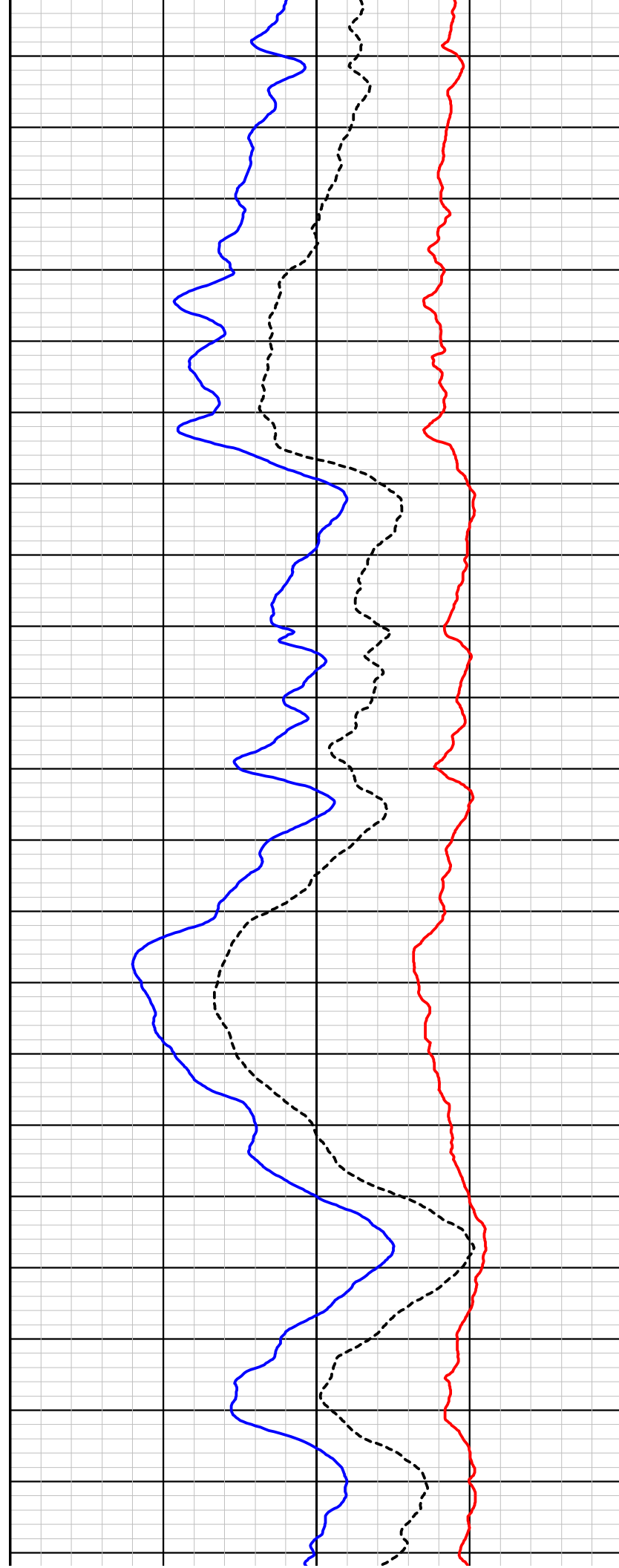
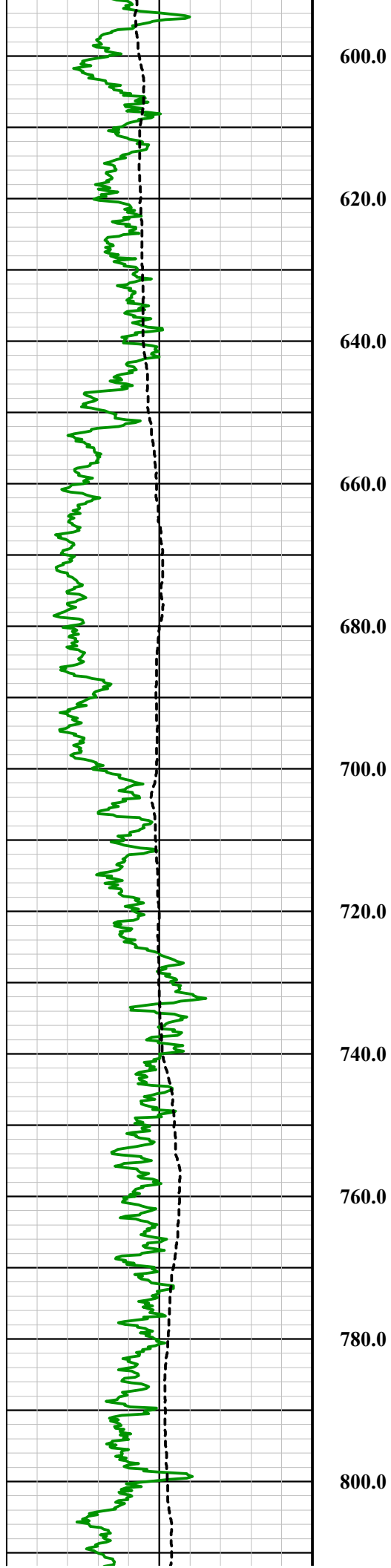
520.0

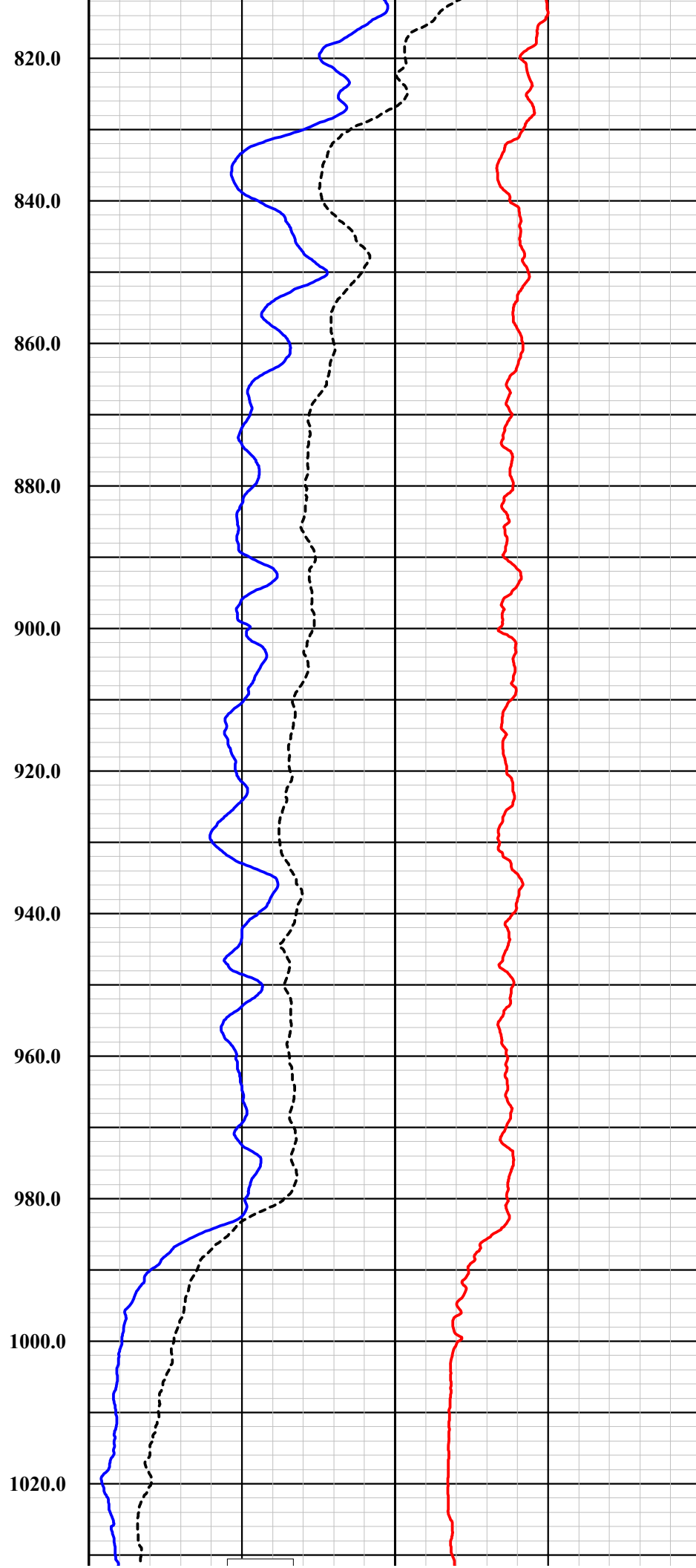
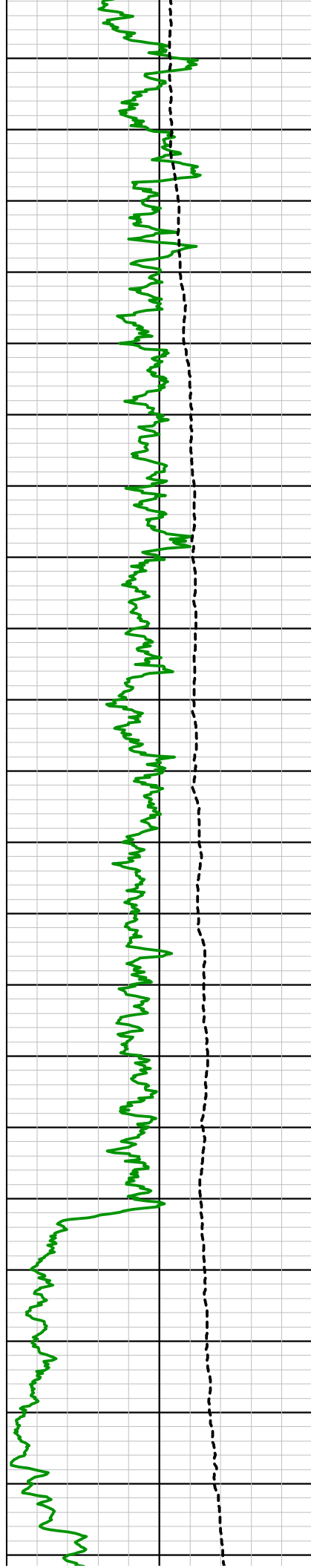
540.0

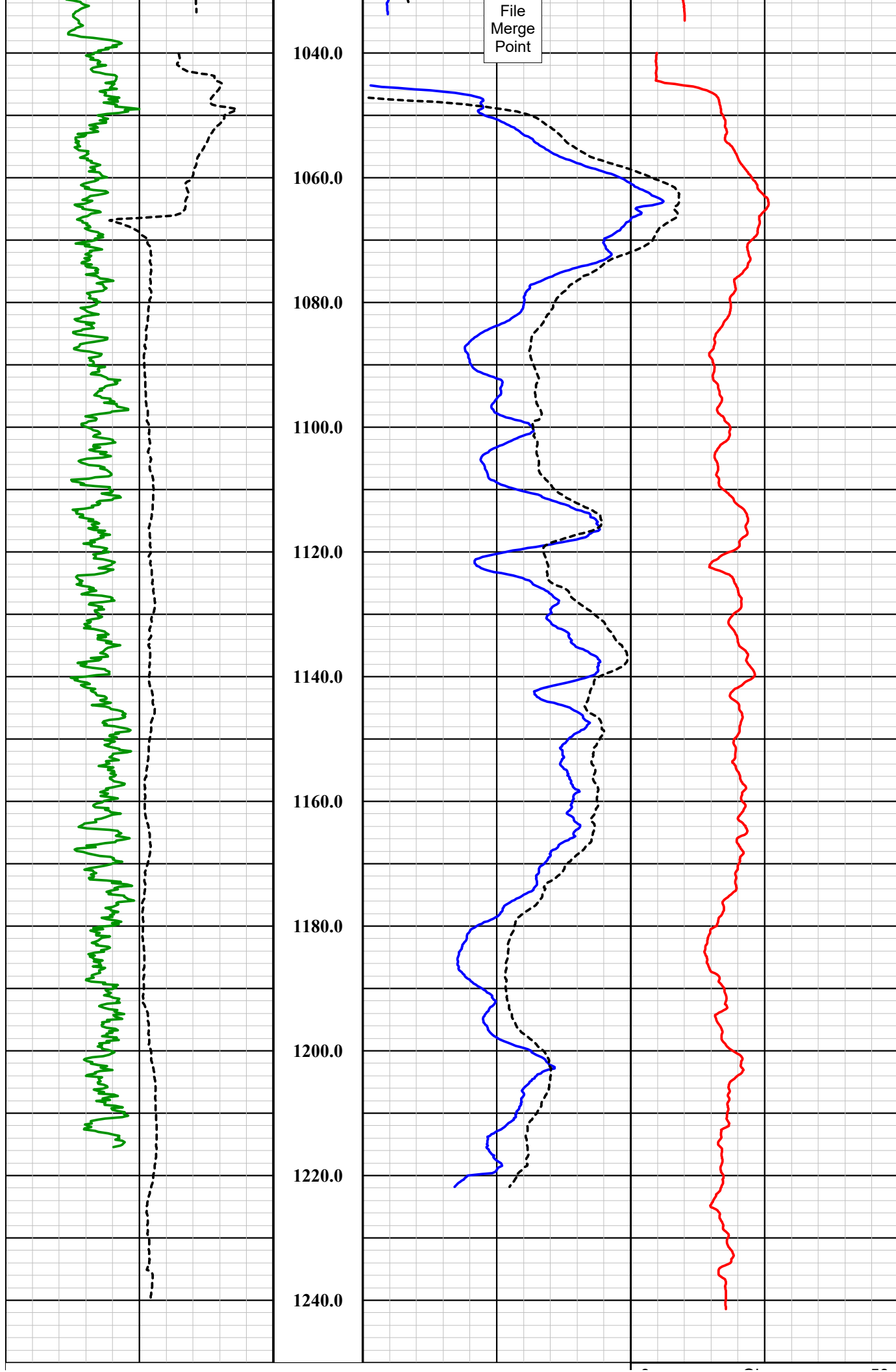
560.0

580.0











Current Electrode/Single Point Resistance
(A Electrode)

1.65" or 42 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft

Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)

Pressure Rating: 200 bar (2900 psi)

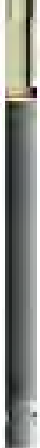
Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"



———— TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter



**Southwest Exploration
Services, LLC**

borehole geophysics & video services

| | |
|---------|-----------------|
| Company | FLORENCE COPPER |
|---------|-----------------|

| | |
|------|------|
| Well | R-02 |
|------|------|

| | |
|-------|-----------------|
| Field | FLORENCE COPPER |
|-------|-----------------|

| | |
|--------|-------|
| County | PINAL |
|--------|-------|

| | |
|-------|---------|
| State | ARIZONA |
|-------|---------|

Final

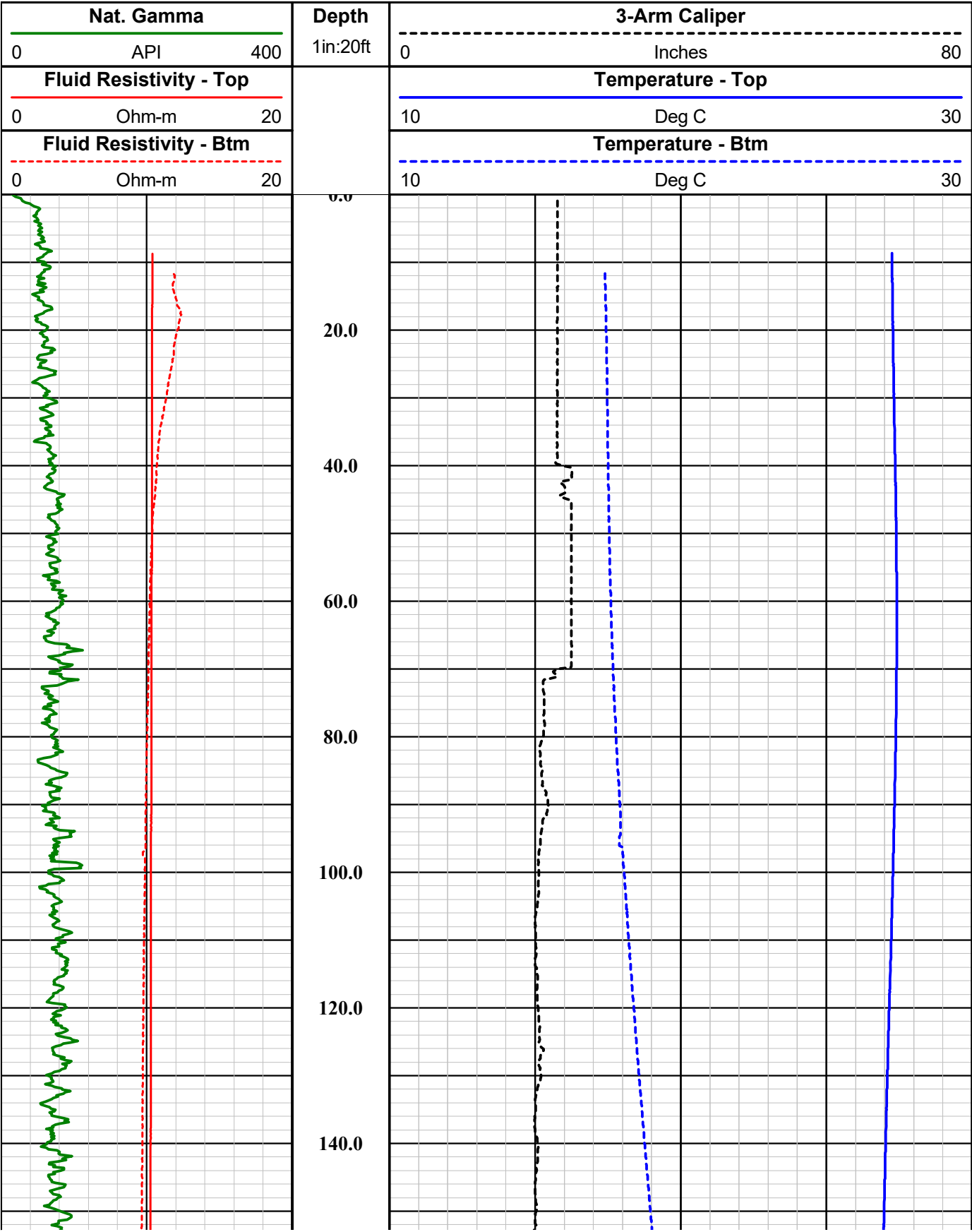
E-Log Summary

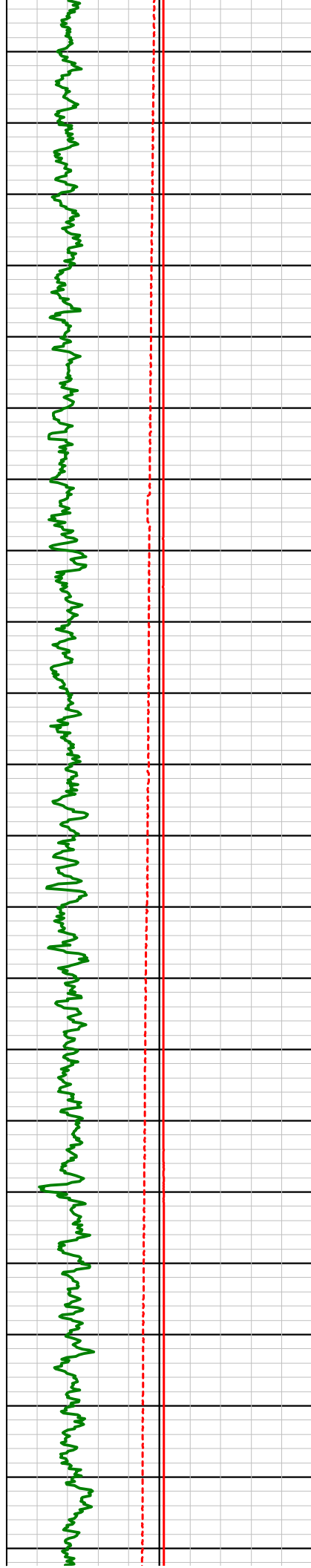


| Tool Summary: | | | | | |
|---|-------------------|-------------------|-------------------|-------------------|-------------------|
| Date | 11-4-17 / 1-23-18 | Date | 11-4-17 / 1-26-18 | Date | 11-4-17 / 1-26-18 |
| Run No. | 1 | Run No. | 2 | Run No. | 3 |
| Tool Model | MSI COMBO TOOL | Tool Model | MSI 60MM SONIC | Tool Model | GEOVISTA E-LOG |
| Tool SN | 5543 / 4183 | Tool SN | 5001 / 5050 | Tool SN | 5019 / 4790 |
| From | SURFACE | From | SURFACE | From | SURFACE |
| To | 1220 FT. | To | 1030 FT. | To | 1236 FT. |
| Recorded By | A. OLSON | Recorded By | A. OLSON | Recorded By | A. OLSON |
| Truck No | 200 / 900 | Truck No | 200 / 900 | Truck No | 200 / 900 |
| Operation Check | 1-20-18 | Operation Check | 1-24-18 | Operation Check | 1-24-18 |
| Calibration Check | 1-20-18 | Calibration Check | 1-24-18 | Calibration Check | N/A |
| Time Logged | 8:15 A.M. | Time Logged | 6:55 A.M. | Time Logged | 7:40 A.M. |
| | | | | | |
| Date | 11-4-17 / 1-26-18 | Date | 1-26-18 | Date | |
| Run No. | 4 | Run No. | 5 | Run No. | 6 |
| Tool Model | MSI DEVIATION | Tool Model | COMPROBE 2 1/8" | Tool Model | |
| Tool SN | 6002 | Tool SN | 6555 | Tool SN | |
| From | SURFACE | From | SURFACE | From | |
| To | 1030 FT. | To | 1220 FT. | To | |
| Recorded By | A. OLSON | Recorded By | A. OLSON | Recorded By | |
| Truck No | 200 / 900 | Truck No | 900 | Truck No | |
| Operation Check | 1-24-18 | Operation Check | 1-25-18 | Operation Check | |
| Calibration Check | N/A | Calibration Check | 1-25-18 | Calibration Check | |
| Time Logged | 8:30 A.M. | Time Logged | 6:15 A.M. | Time Logged | |
| Additional Comments: | | | | | |
| Caliper Arms Used: 23 IN. EXTENDED Calibration Points: 20 IN. & 40 IN. | | | | | |
| Tool Calibration Date: 12-1-2018 Calibration Date: 12-1-2018 | | | | | |

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.





160.0

180.0

200.0

220.0

240.0

260.0

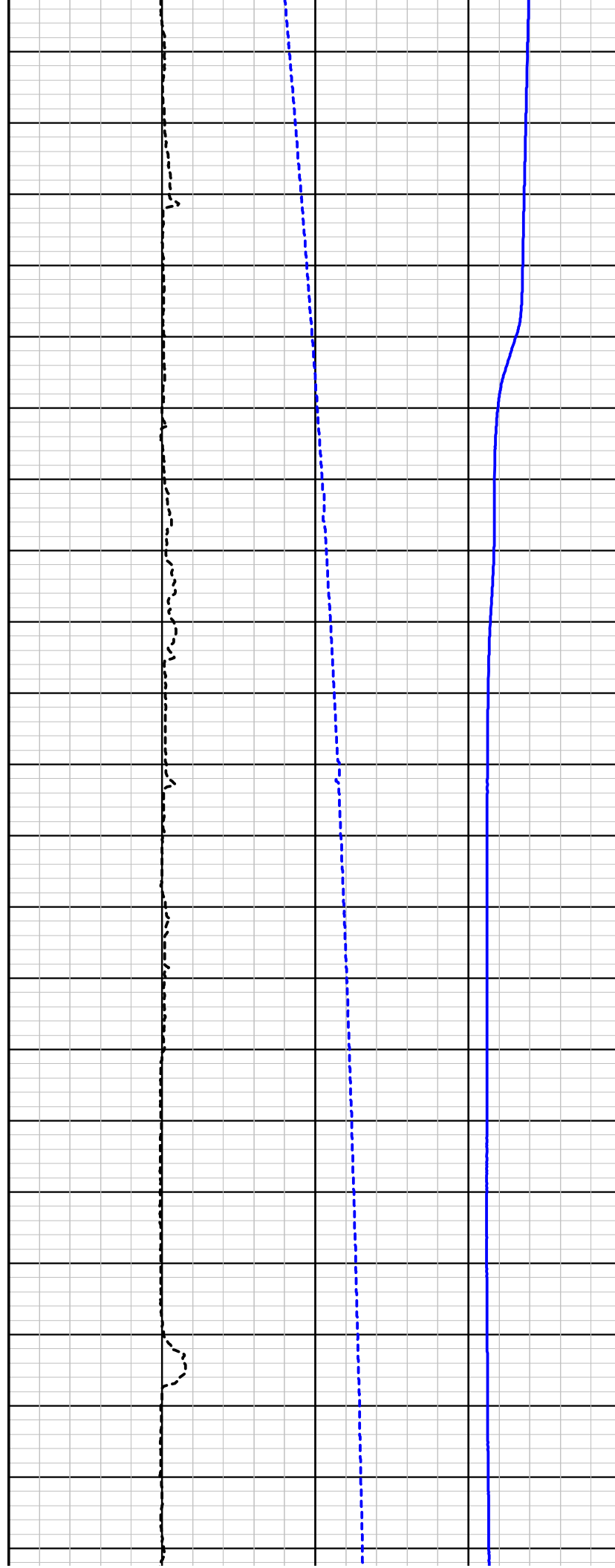
280.0

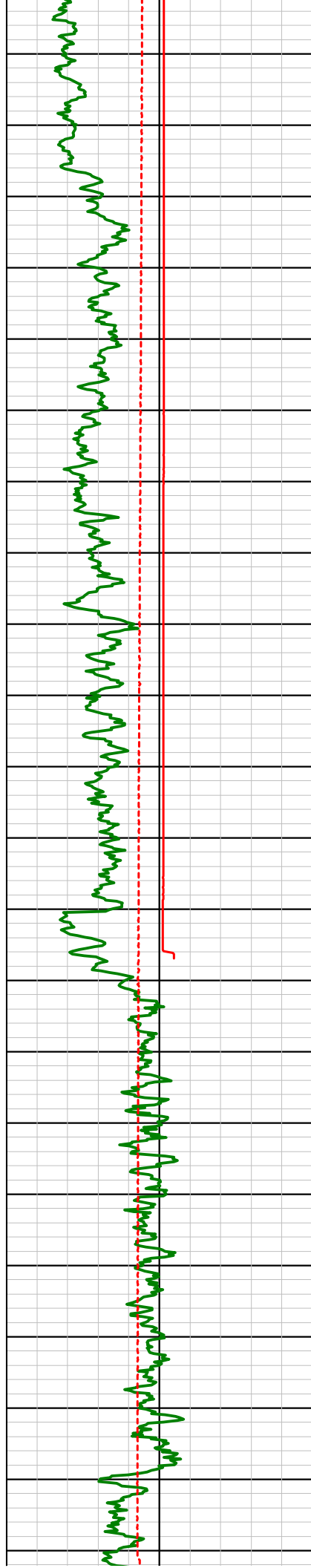
300.0

320.0

340.0

360.0





380.0

400.0

420.0

440.0

460.0

480.0

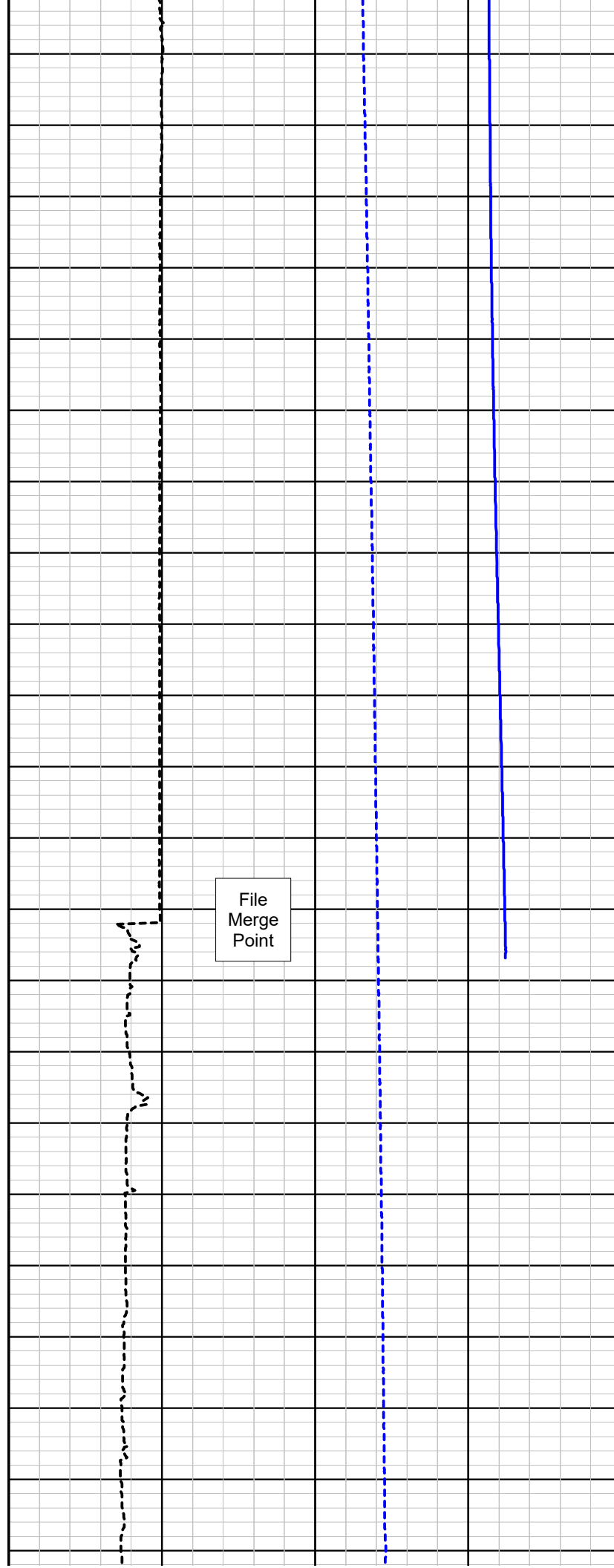
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520.0

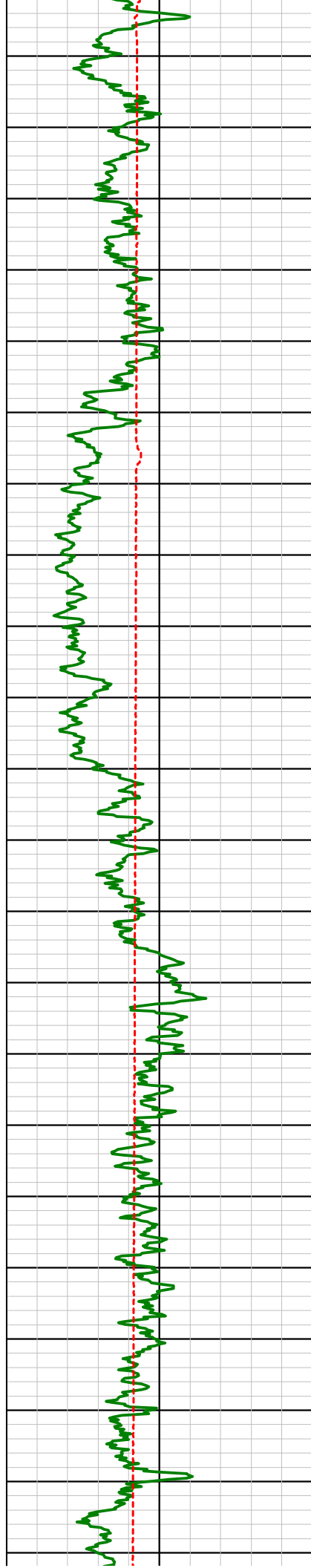
540.0

560.0

580.0



File
Merge
Point



600.0

620.0

640.0

660.0

680.0

700.0

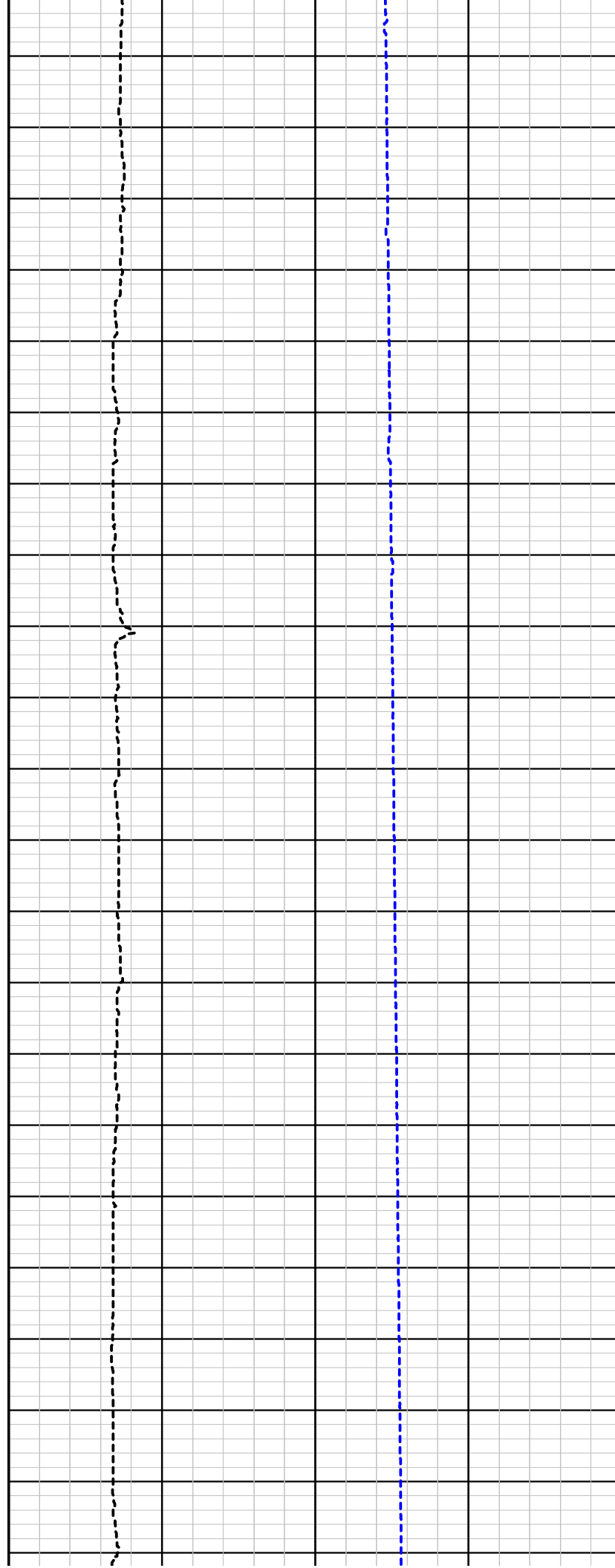
720.0

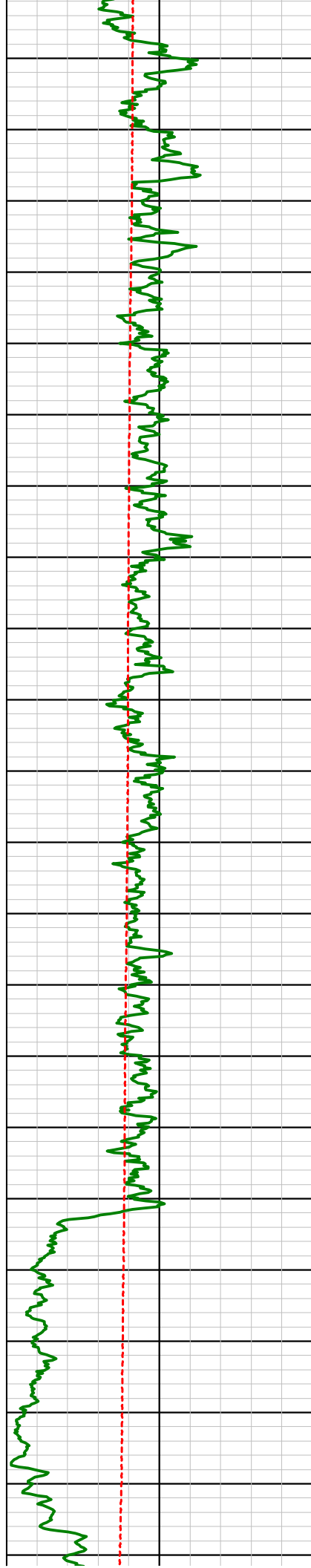
740.0

760.0

780.0

800.0





820.0

840.0

860.0

880.0

900.0

920.0

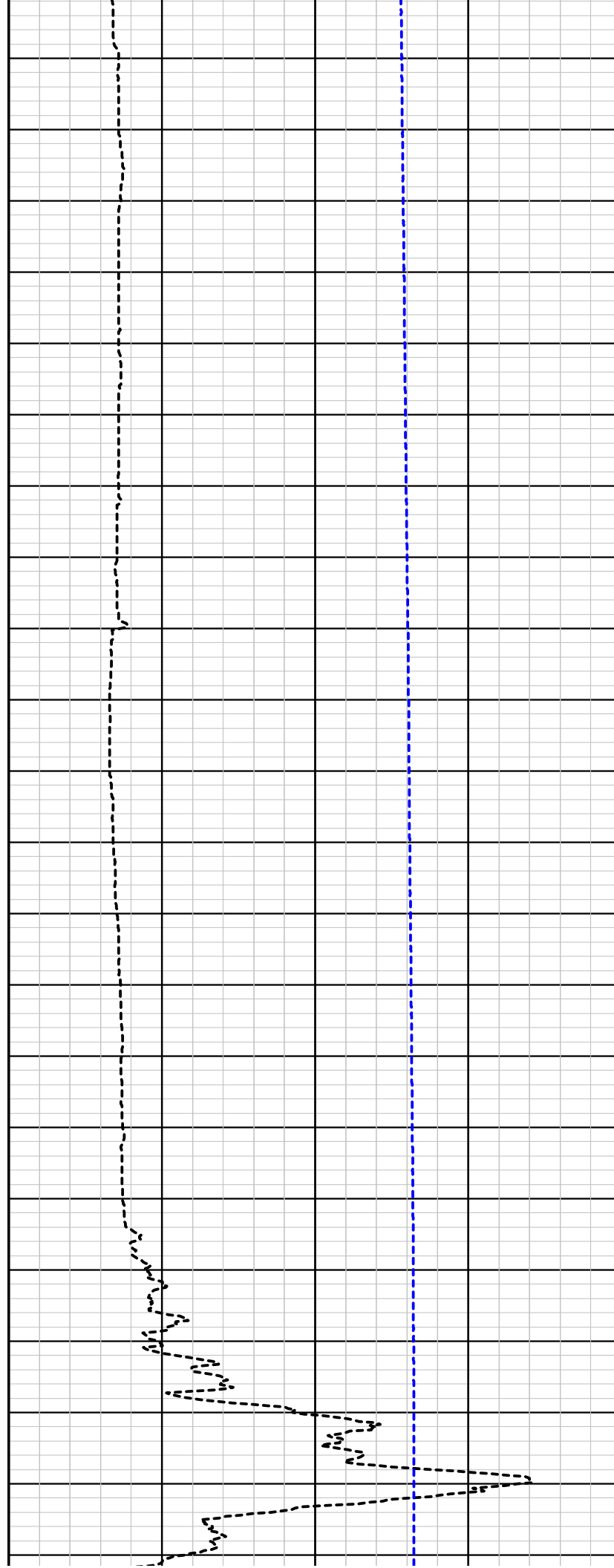
940.0

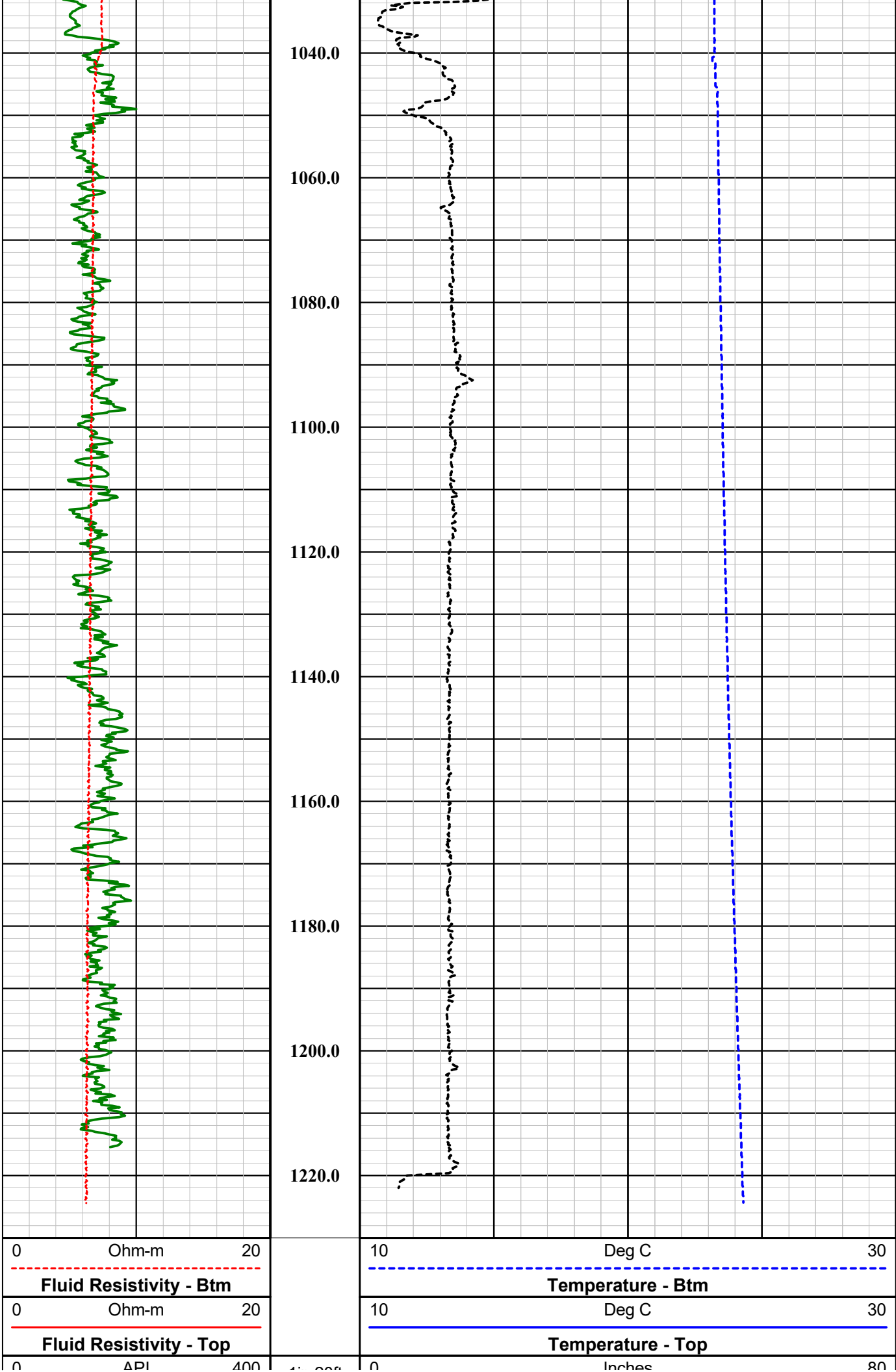
960.0

980.0

1000.0

1020.0

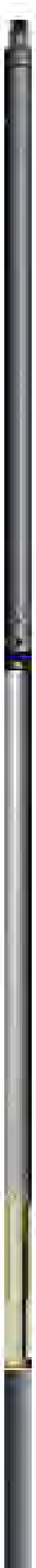




| | | | | | |
|------------|-----|----------|---------------|--------|----|
| 0 | 100 | 1in:20ft | 0 | inches | 00 |
| Nat. Gamma | | Depth | 3-Arm Caliper | | |

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

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NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)



1.375" or 34.9 mm Diameter



**Southwest Exploration
Services, LLC**

borehole geophysics & video services

Company FLORENCE COPPER

Well R-02

Field FLORENCE COPPER

County PINAL

State ARIZONA

Final

GCT Summary



Southwest Exploration Services, LLC

borehole geophysics & video services

| | | | | | | | | | |
|----------------------------------|--|--|--|--|--|--|--|--|--|
| COMPANY FLORENCE COPPER | | | | | | | | | |
| WELL ID R-02 | | | | | | | | | |
| FIELD FLORENCE COPPER | | | | | | | | | |
| COUNTY PINAL | | | | | | | | | |
| STATE ARIZONA | | | | | | | | | |
| TYPE OF LOGS: 60mm SONIC | | | | | | | | | |
| MORE: GAMMA - CALIPER | | | | | | | | | |
| LOCATION | | | | | | | | | |
| OTHER SERVICES | | | | | | | | | |
| E-LOG | | | | | | | | | |
| TEMPERATURE | | | | | | | | | |
| FLUID RESISTIVITY | | | | | | | | | |
| DEVIATION | | | | | | | | | |
| PERMANENT DATUM | | | | | | | | | |
| ELEVATION | | | | | | | | | |
| K.B. | | | | | | | | | |
| LOG MEAS. FROM GROUND LEVEL | | | | | | | | | |
| ABOVE PERM. DATUM | | | | | | | | | |
| D.F. | | | | | | | | | |
| DRILLING MEAS. FROM GROUND LEVEL | | | | | | | | | |
| G.L. | | | | | | | | | |
| DATE | | | | | | | | | |
| 11-4-17 / 1-26-18 | | | | | | | | | |
| TYPE FLUID IN HOLE | | | | | | | | | |
| MUD | | | | | | | | | |
| RUN No | | | | | | | | | |
| 1 & 2 | | | | | | | | | |
| MUD WEIGHT | | | | | | | | | |
| N/A | | | | | | | | | |
| TYPE LOG | | | | | | | | | |
| SONIC - GAMMA - CALIPER | | | | | | | | | |
| VISCOSITY | | | | | | | | | |
| N/A | | | | | | | | | |
| DEPTH-DRILLER | | | | | | | | | |
| 1244 FT. | | | | | | | | | |
| LEVEL | | | | | | | | | |
| FULL | | | | | | | | | |
| DEPTH-LOGGER | | | | | | | | | |
| 1030 FT. | | | | | | | | | |
| MAX. REC. TEMP. | | | | | | | | | |
| 24.30 DEG. C | | | | | | | | | |
| BTM LOGGED INTERVAL | | | | | | | | | |
| 1030 FT. | | | | | | | | | |
| IMAGE ORIENTED TO: | | | | | | | | | |
| N/A | | | | | | | | | |
| TOP LOGGED INTERVAL | | | | | | | | | |
| SURFACE | | | | | | | | | |
| SAMPLE INTERVAL | | | | | | | | | |
| 0.25 FT. | | | | | | | | | |
| DRILLER / RIG# | | | | | | | | | |
| HYDRO RESOURCES | | | | | | | | | |
| LOGGING TRUCK | | | | | | | | | |
| TRUCK #200 / #900 | | | | | | | | | |
| RECORDED BY / Logging Eng. | | | | | | | | | |
| A. OLSON | | | | | | | | | |
| TOOL STRING/SN | | | | | | | | | |
| MSI 60mm SONIC SN 5050 | | | | | | | | | |
| WITNESSED BY | | | | | | | | | |
| SAM - H&A | | | | | | | | | |
| LOG TIME:ON SITE/OFF SITE | | | | | | | | | |
| 5:20 A.M. | | | | | | | | | |
| RUN | | | | | | | | | |
| BOREHOLE RECORD | | | | | | | | | |
| CASING RECORD | | | | | | | | | |
| NO. | | | | | | | | | |
| BIT | | | | | | | | | |
| FROM | | | | | | | | | |
| TO | | | | | | | | | |
| SIZE | | | | | | | | | |
| WGT. | | | | | | | | | |
| FROM | | | | | | | | | |
| TO | | | | | | | | | |
| 1 | | | | | | | | | |
| ? IN> | | | | | | | | | |
| SURFACE | | | | | | | | | |
| 40 FT. | | | | | | | | | |
| 24 IN. | | | | | | | | | |
| STEEL | | | | | | | | | |
| SURFACE | | | | | | | | | |
| 40 FT. | | | | | | | | | |
| 2 | | | | | | | | | |
| 20 IN. | | | | | | | | | |
| 40 FT. | | | | | | | | | |
| 500 FT. | | | | | | | | | |
| 14 IN. | | | | | | | | | |
| STEEL | | | | | | | | | |
| SURFACE | | | | | | | | | |
| 500 FT. | | | | | | | | | |
| 3 | | | | | | | | | |
| 12 1/4 IN. | | | | | | | | | |
| 500 FT. | | | | | | | | | |
| TOTAL DEPTH | | | | | | | | | |
| COMMENTS: | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Tool Summary:

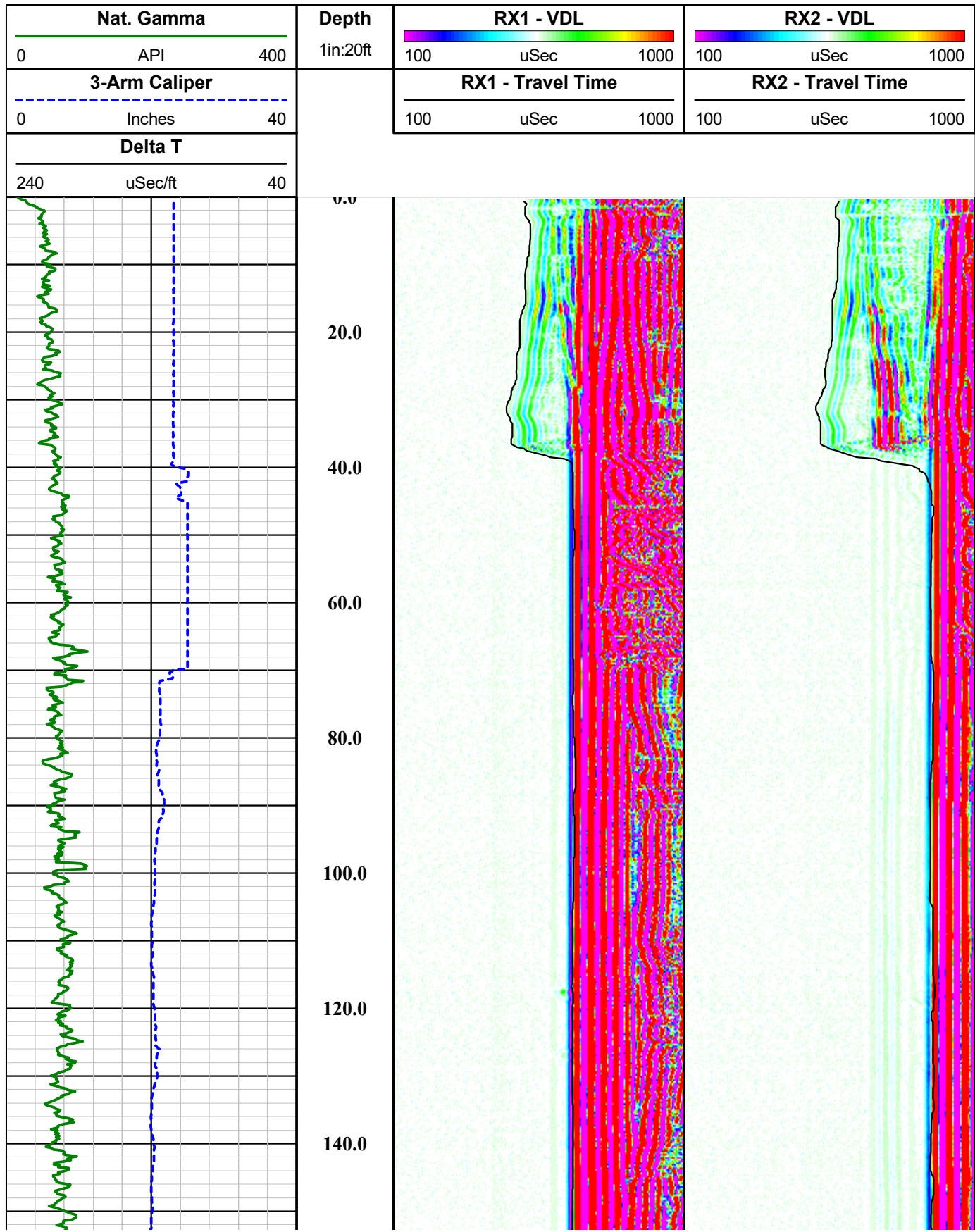
| | | | | | |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Date | 11-4-17 / 1-23-18 | Date | 11-4-17 / 1-26-18 | Date | 11-4-17 / 1-26-18 |
| Run No. | 1 | Run No. | 2 | Run No. | 3 |
| Tool Model | MSI COMBO TOOL | Tool Model | MSI 60MM SONIC | Tool Model | GEOVISTA E-LOG |
| Tool SN | 5543 / 4183 | Tool SN | 5001 / 5050 | Tool SN | 5019 / 4790 |
| From | SURFACE | From | SURFACE | From | SURFACE |
| To | 1220 FT. | To | 1030 FT. | To | 1236 FT. |
| Recorded By | A. OLSON | Recorded By | A. OLSON | Recorded By | A. OLSON |
| Truck No | 200 / 900 | Truck No | 200 / 900 | Truck No | 200 / 900 |
| Operation Check | 1-20-18 | Operation Check | 1-24-18 | Operation Check | 1-24-18 |
| Calibration Check | 1-20-18 | Calibration Check | 1-24-18 | Calibration Check | N/A |
| Time Logged | 8:15 A.M. | Time Logged | 6:55 A.M. | Time Logged | 7:40 A.M. |
| | | | | | |
| Date | 11-4-17 / 1-26-18 | Date | 1-26-18 | Date | |
| Run No. | 4 | Run No. | 5 | Run No. | 6 |
| Tool Model | MSI DEVIATION | Tool Model | COMPROBE 2 1/8" | Tool Model | |
| Tool SN | 6002 | Tool SN | 6555 | Tool SN | |
| From | SURFACE | From | SURFACE | From | |
| To | 1030 FT. | To | 1220 FT. | To | |
| Recorded By | A. OLSON | Recorded By | A. OLSON | Recorded By | |
| Truck No | 200 / 900 | Truck No | 900 | Truck No | |
| Operation Check | 1-24-18 | Operation Check | 1-25-18 | Operation Check | |
| Calibration Check | N/A | Calibration Check | 1-25-18 | Calibration Check | |
| Time Logged | 8:30 A.M. | Time Logged | 6:15 A.M. | Time Logged | |

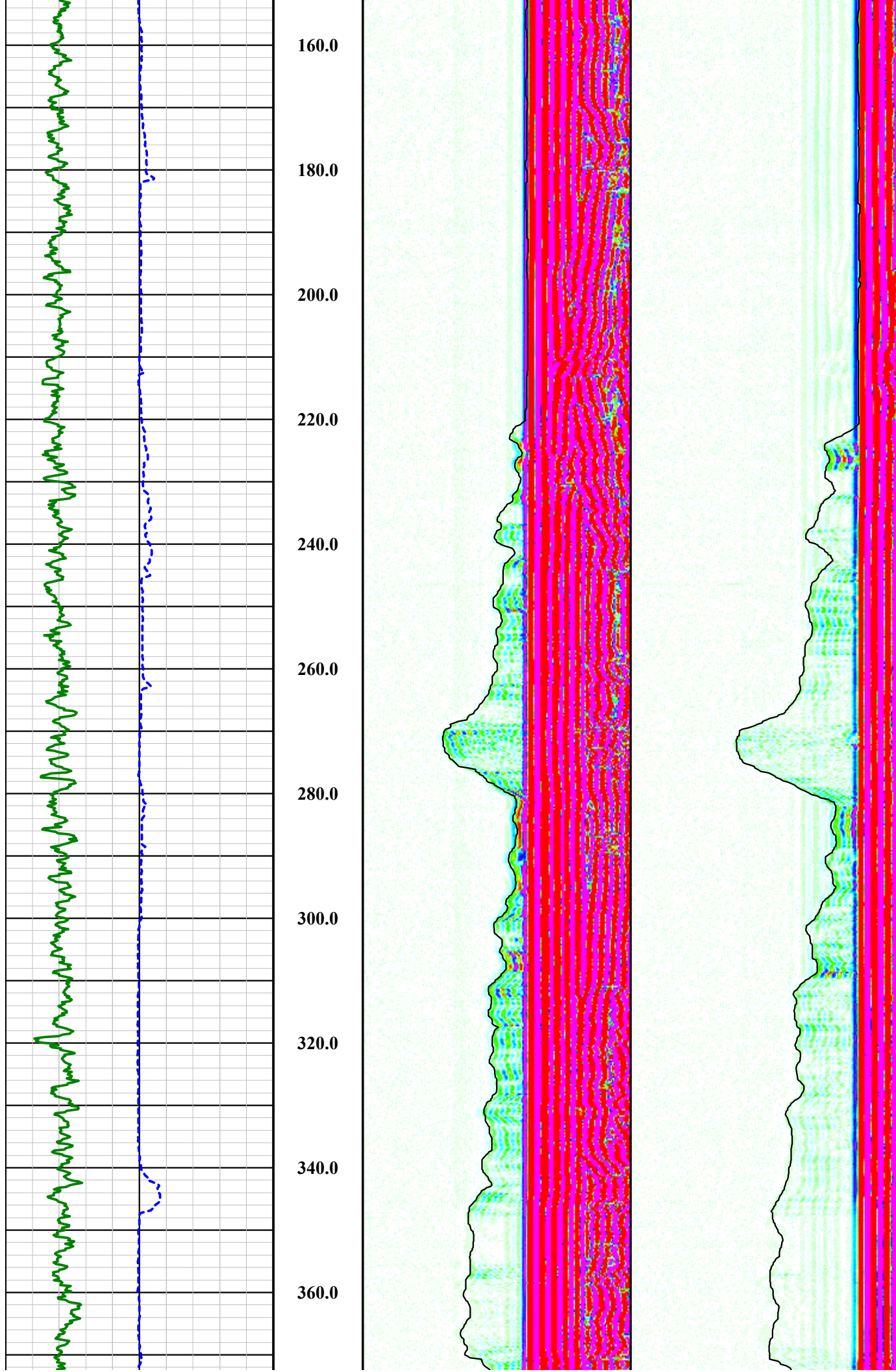
Additional Comments:

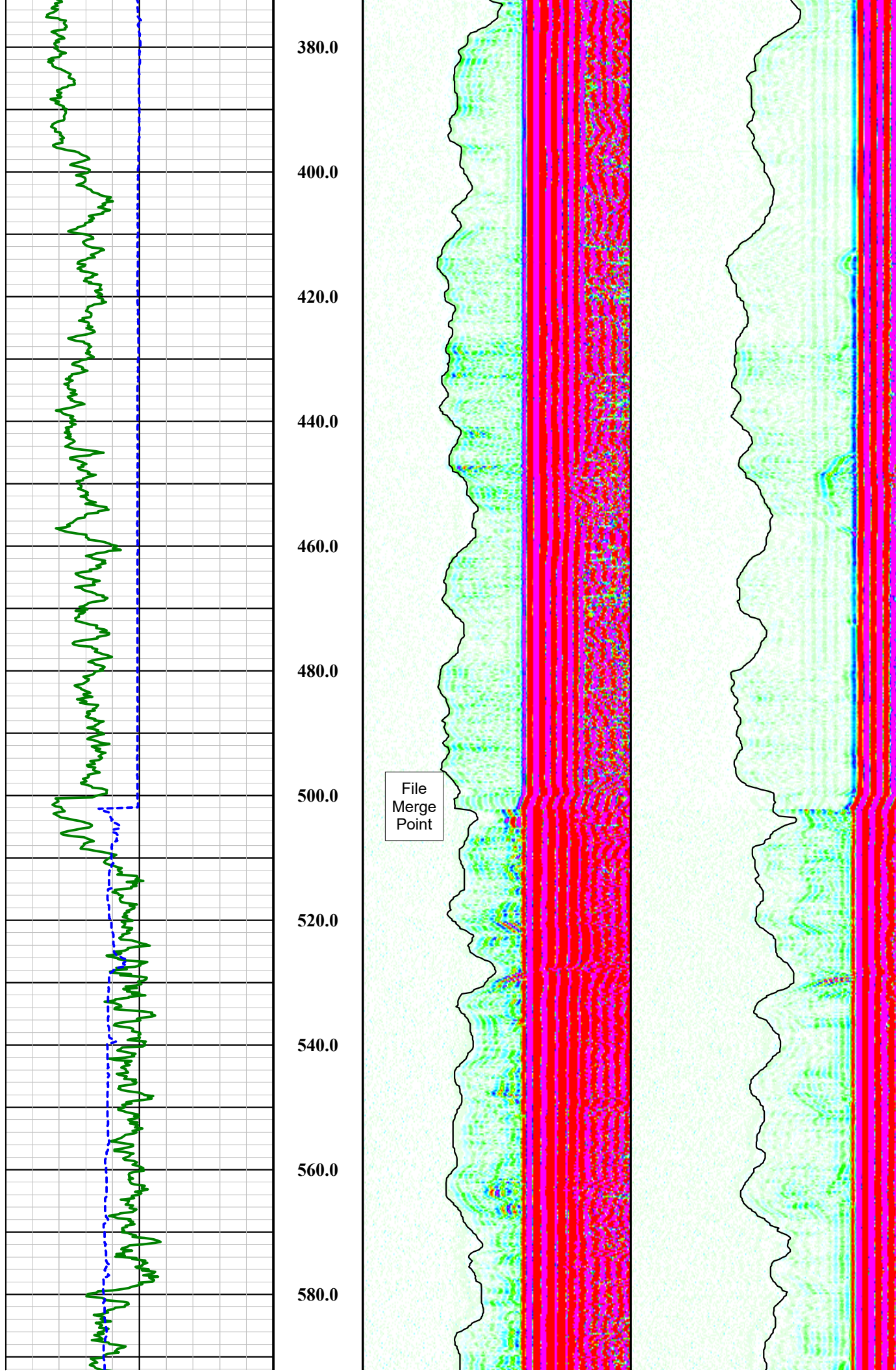
Caliper Arms Used: 23 IN. EXTENDED

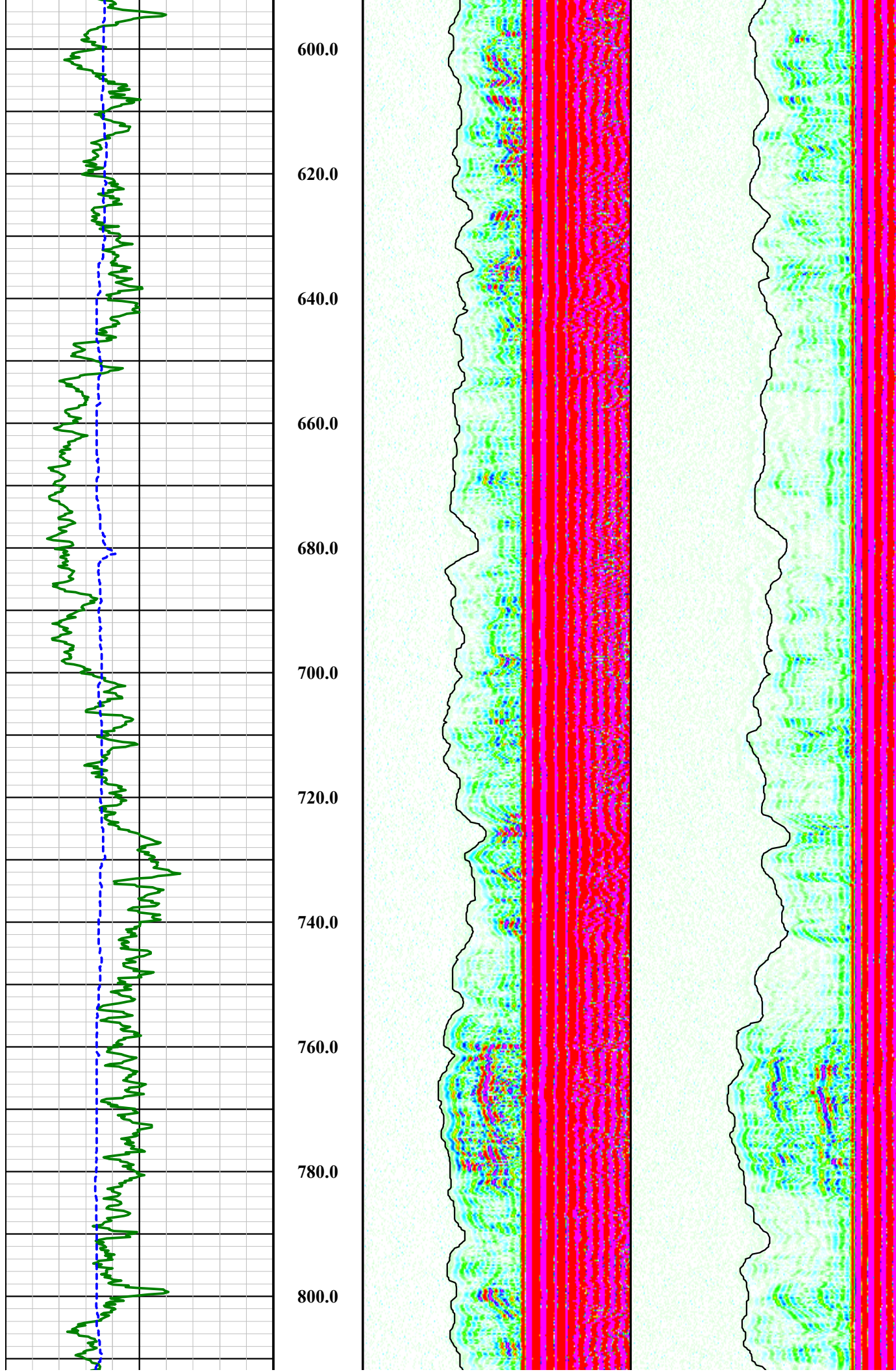
Calibration Points: 20 IN. & 40 IN.

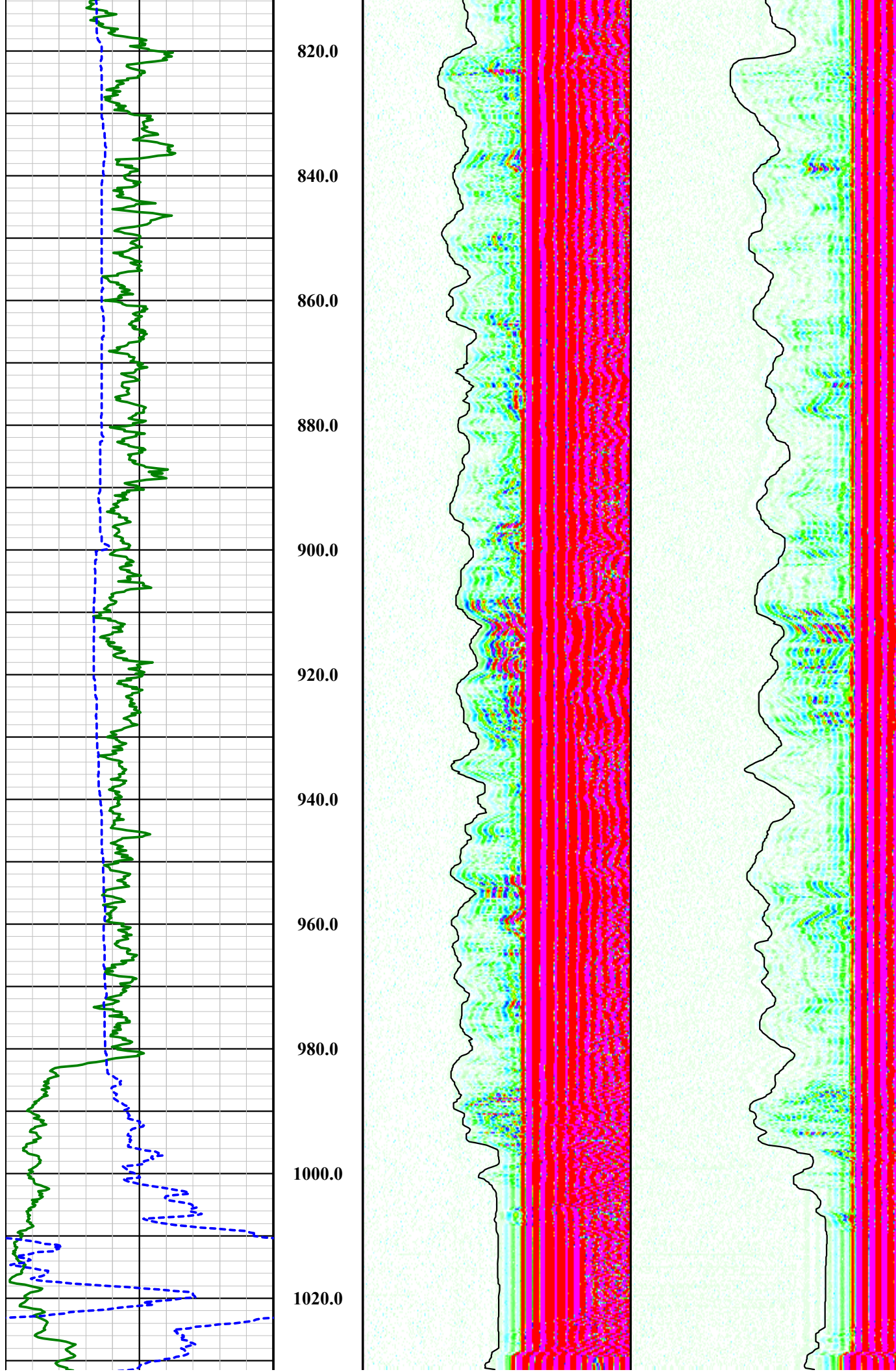
All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

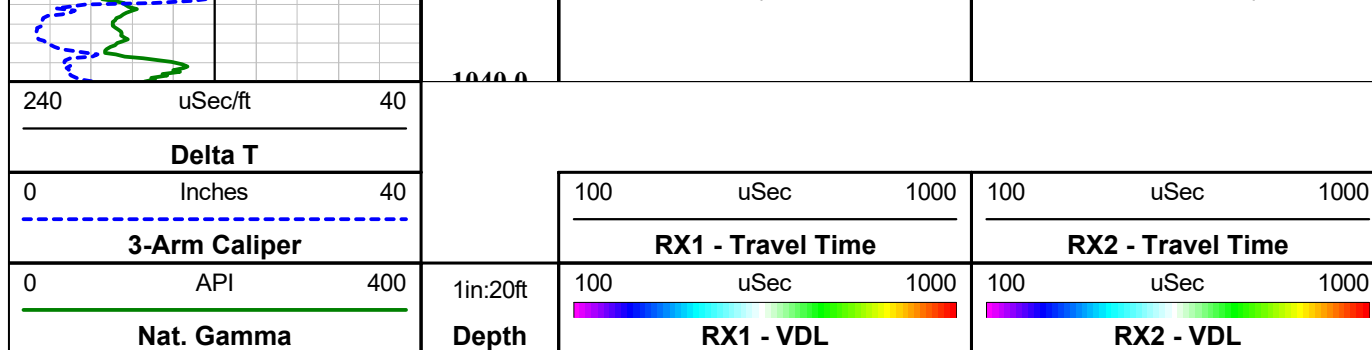












MSI 60 mm 2 RX Full Waveform Sonic Tool

Probe Top = Depth Ref.

Tool SN: 5001, 5050 & 6003



Four Conductor MSI Probe Top

Probe Length = 2.8 m or 9.19 ft
 Probe Weight = ~26.5 kg or 58.4 lbs

Sensors: Ceramic Piezoelectric

Transmitter Frequency: 24 - 28 kHz resonant frequency

Rx - Rx Spacing: 0.3 m (12.0 in)

Typically centralized with external centralizers

Can only be collected in fluid

Temperature Rating: 80 Deg C (176 Deg F)

Pressure Rating: 200 bar (2900 psi)

Rx-2 Tx - Rx2 Spacing = 1.22 m (48.0 in)

Rx-1 Tx - Rx1 Spacing = .91 m (36.0 in)

Acoustic Isolater

Tx = Acoustic Transmitter



0.660 m or 26.0 in. - End of tool to center of Tx

2.36 in or 60 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft

Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)

Pressure Rating: 200 bar (2900 psi)

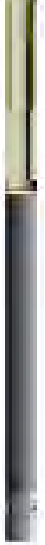
Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"



TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter



**Southwest Exploration
Services, LLC**

borehole geophysics & video services

Company FLORENCE COPPER

Well R-02
Field FLORENCE COPPER
County PINAL
State ARIZONA

Final

Sonic Summary



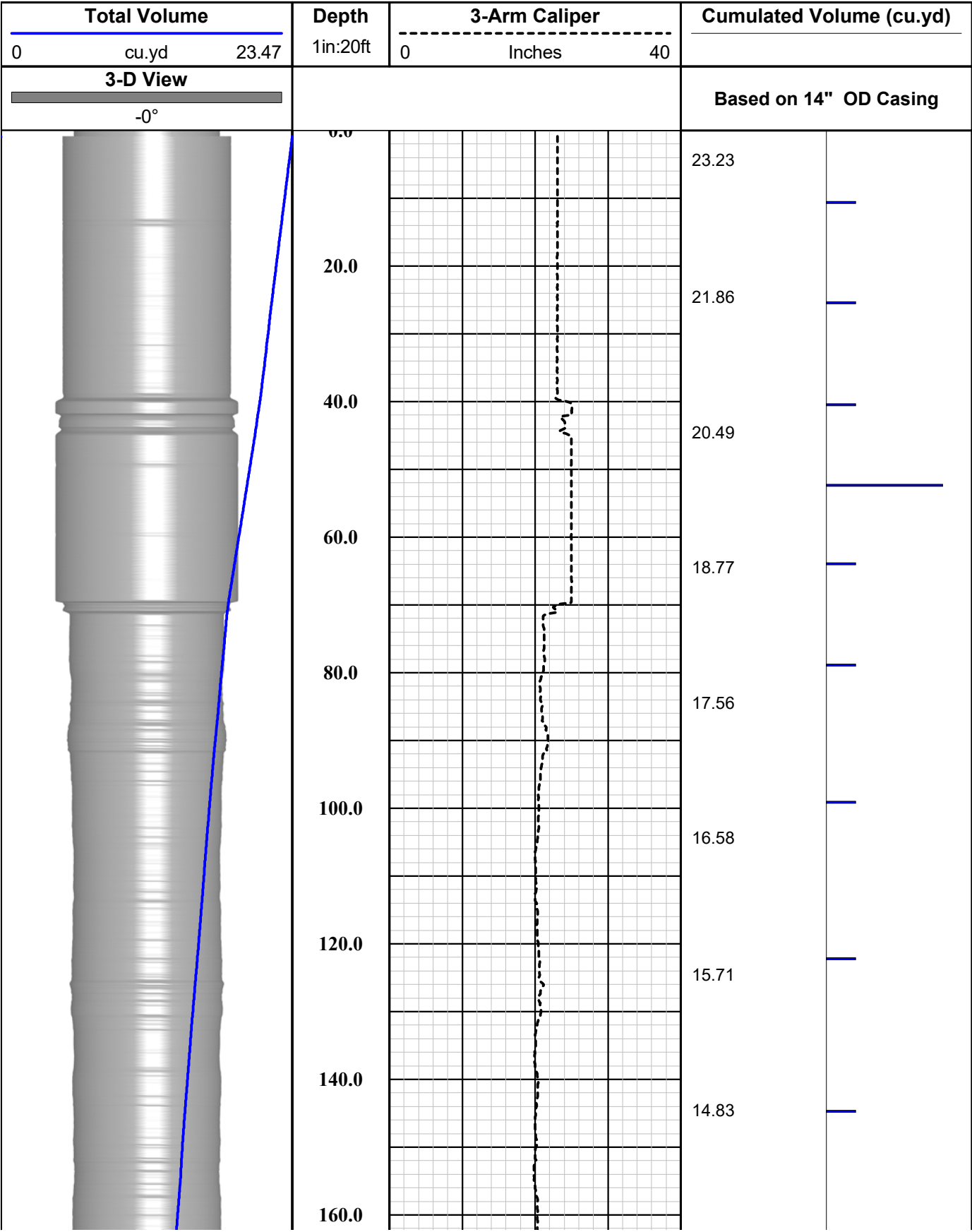
Southwest Exploration Services, LLC

borehole geophysics & video services

| | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|
| COMPANY FLORENCE COPPER | | | | | | | | | |
| WELL ID R-02 | | | | | | | | | |
| FIELD FLORENCE COPPER | | | | | | | | | |
| COUNTY PINAL STATE ARIZONA | | | | | | | | | |
| TYPE OF LOGS: 3-ARM CALIPER MORE: W / VOLUME CALC. | | | | | | | | | |
| LOCATION | | | | | | | | | |
| SEC TWP RGE | | | | | | | | | |
| OTHER SERVICES E-LOG SONIC DEVIATION NAT. GAMMA TEMPERATURE FLUID RESISTIVITY | | | | | | | | | |
| PERMANENT DATUM ELEVATION | | | | | | | | | |
| LOG MEAS. FROM GROUND LEVEL ABOVE PERM. DATUM D.F. | | | | | | | | | |
| DRILLING MEAS. FROM GROUND LEVEL G.L. | | | | | | | | | |
| DATE 11-4-17 TYPE FLUID IN HOLE MUD | | | | | | | | | |
| RUN No 1 MUD WEIGHT N/A | | | | | | | | | |
| TYPE LOG VOLUME CALCULATION VISCOSITY N/A | | | | | | | | | |
| DEPTH-DRILLER 505 FT. LEVEL FULL | | | | | | | | | |
| DEPTH-LOGGER 505 FT. MAX. REC. TEMP. 27.42 DEG. C | | | | | | | | | |
| BTM LOGGED INTERVAL 505 FT. IMAGE ORIENTED TO: N/A | | | | | | | | | |
| TOP LOGGED INTERVAL SURFACE SAMPLE INTERVAL 0.2 FT. | | | | | | | | | |
| DRILLER / RIG# HYDRO RESOURCES LOGGING TRUCK TRUCK #200 | | | | | | | | | |
| RECORDED BY / Logging Eng. A. OLSON / M. QUINONES TOOL STRING/SN MSI COMBO TOOL SN 5543 | | | | | | | | | |
| WITNESSED BY SCOTT - H&A LOG TIME:ON SITE/OFF SITE 4:40 A.M. | | | | | | | | | |
| RUN BOREHOLE RECORD CASING RECORD | | | | | | | | | |
| NO. BIT FROM TO SIZE WGT. FROM TO | | | | | | | | | |
| 1 ? IN> SURFACE 40 FT. 24 IN. STEEL SURFACE 40 FT. | | | | | | | | | |
| 2 20 IN. 40 FT. TOTAL DEPTH | | | | | | | | | |
| 3 | | | | | | | | | |
| COMMENTS: | | | | | | | | | |
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Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.





180.0

200.0

220.0

240.0

260.0

280.0

300.0

320.0

340.0

360.0

380.0

14.04

13.12

12.30

11.44

10.46

9.55

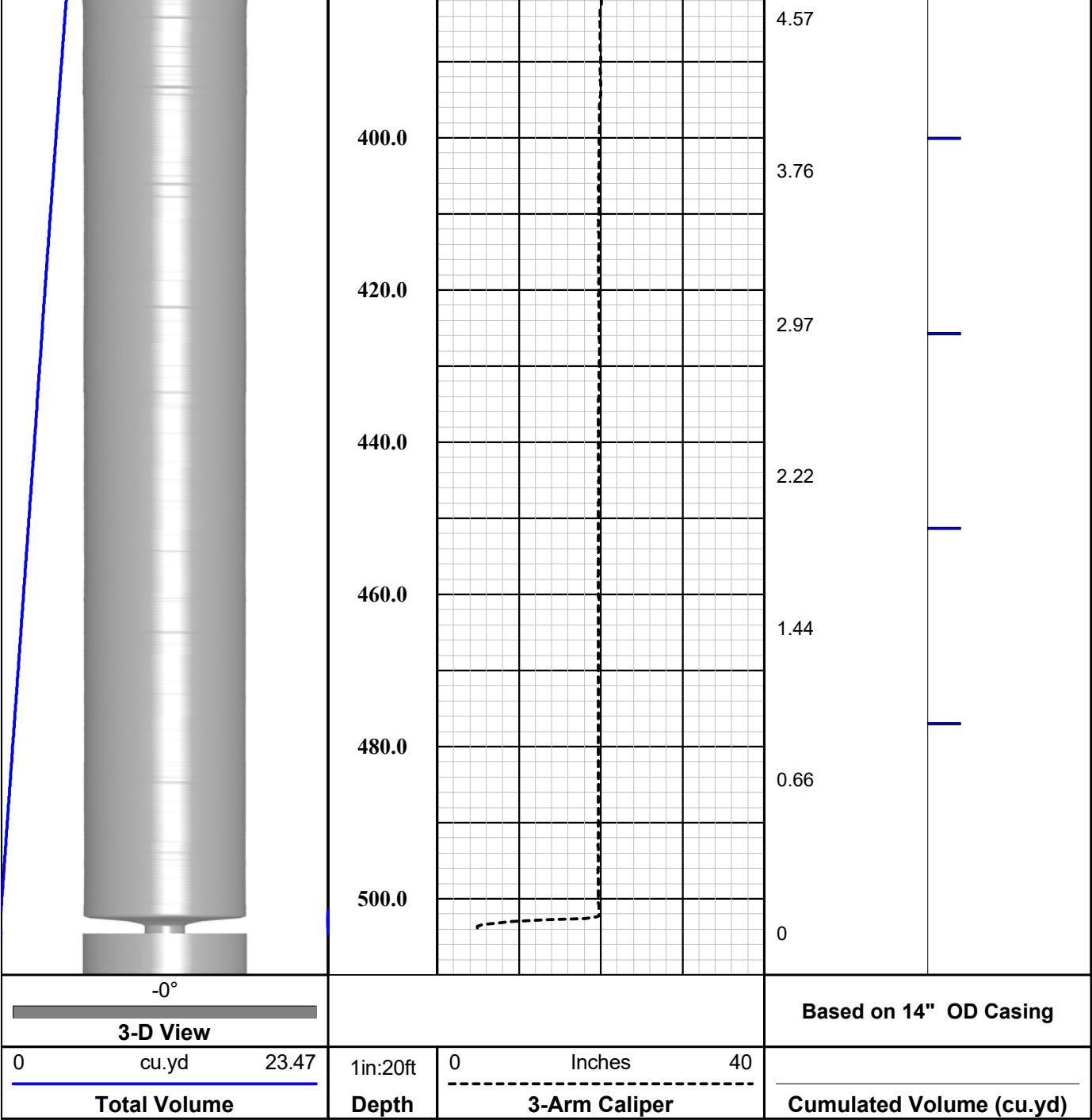
8.71

7.87

7.07

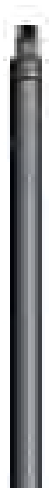
6.19

5.37



MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



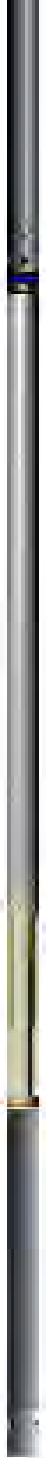
Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)



————— **Natural Gamma Ray = 0.76 m (29.75 in)**

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

————— **3-Arm Caliper = 1.44 m (56.75 in)**

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

————— **TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)**

1.375" or 34.9 mm Diameter



**Southwest Exploration
Services, LLC**

borehole geophysics & video services

Company FLORENCE COPPER

Well R-02
Field FLORENCE COPPER
County PINAL
State ARIZONA

Final

Caliper w / Volume Calculation Summary



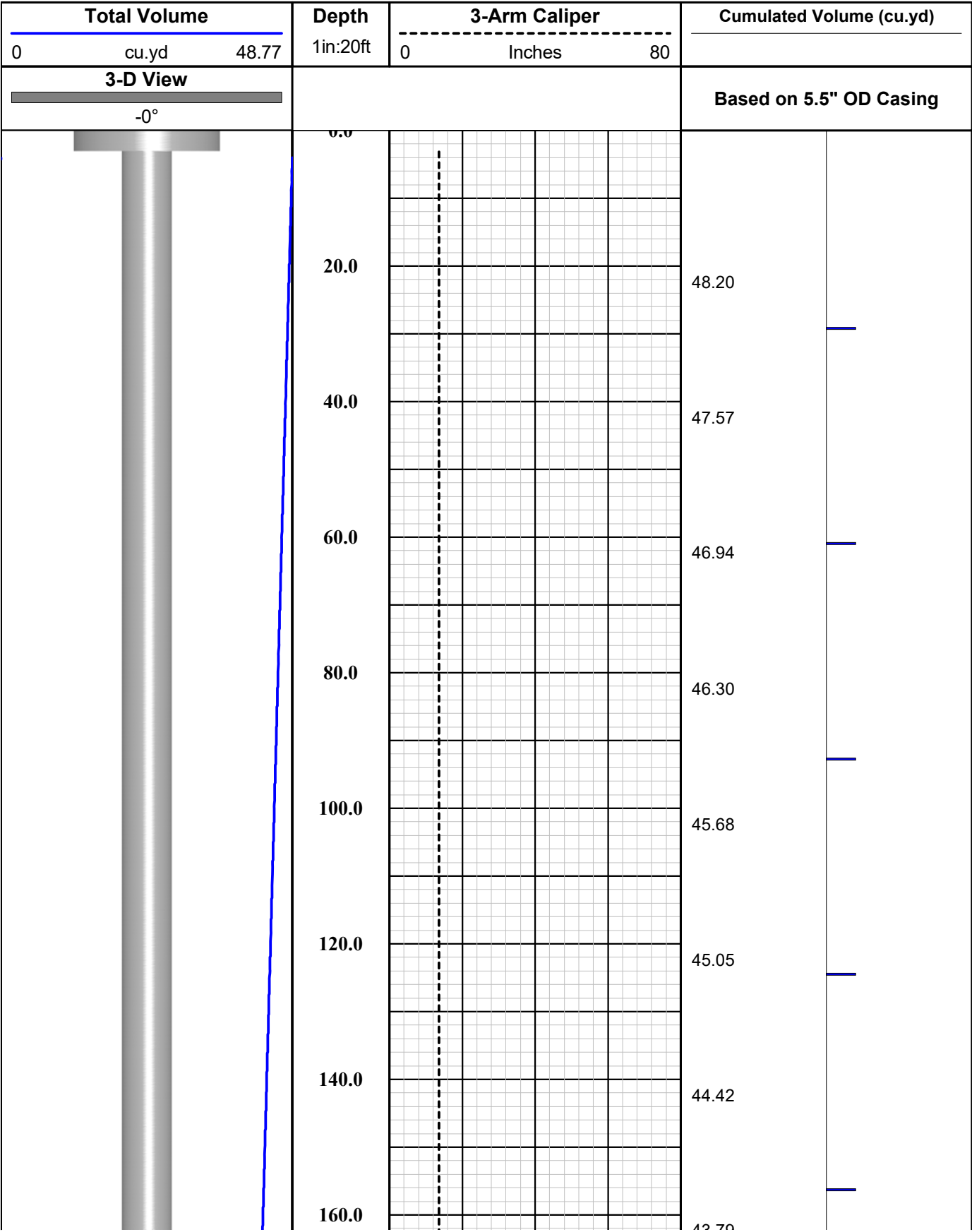
Southwest Exploration Services, LLC

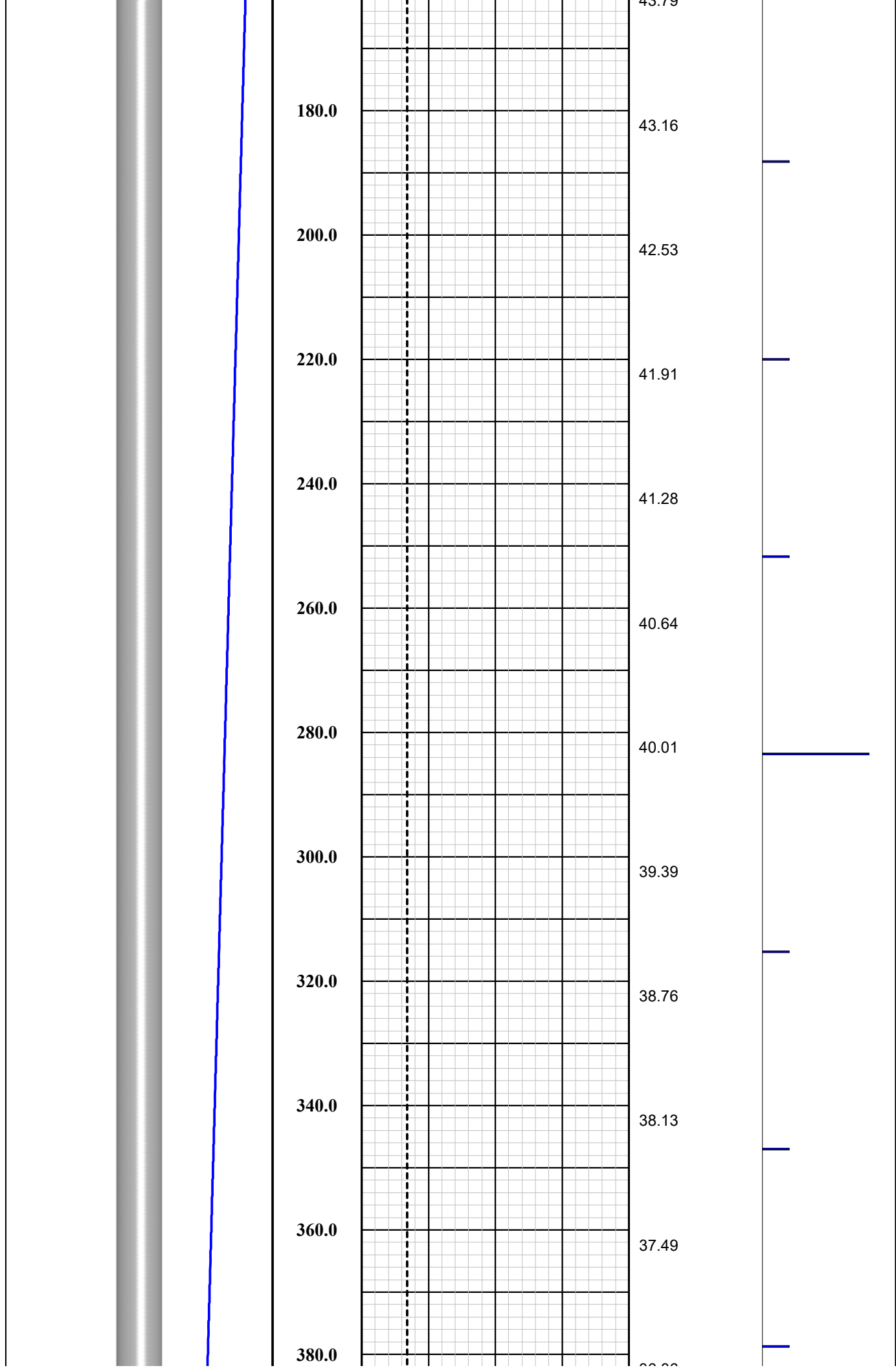
borehole geophysics & video services

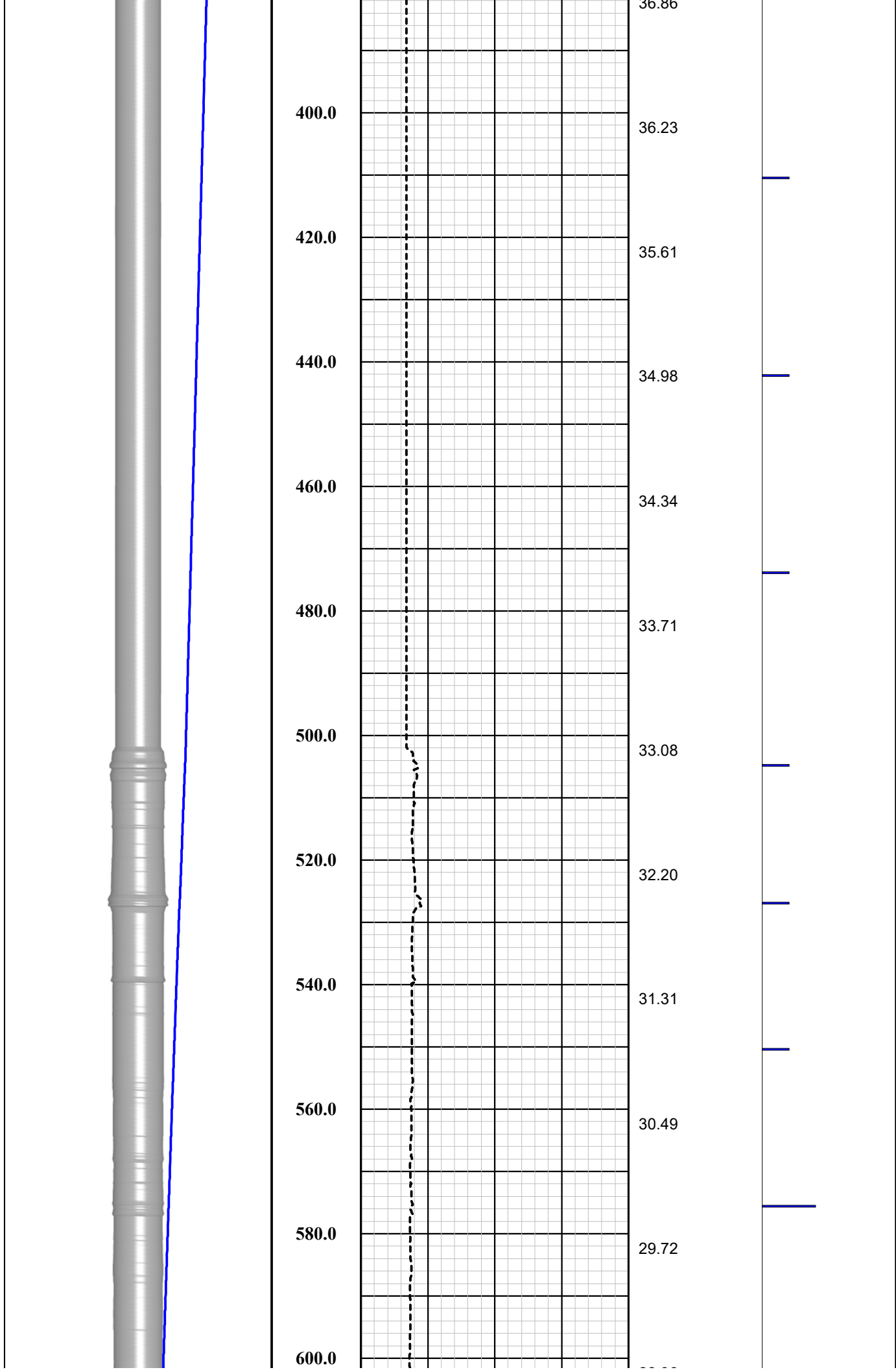
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| COMPANY FLORENCE COPPER | | | | | | | | | |
| WELL ID R-02 | | | | | | | | | |
| FIELD FLORENCE COPPER | | | | | | | | | |
| COUNTY PINAL | | | | | | | | | |
| STATE ARIZONA | | | | | | | | | |
| TYPE OF LOGS: 3-ARM CALIPER MORE: W / VOLUME CALC. | | | | | OTHER SERVICES E-LOG SONIC DEVIATION NAT. GAMMA TEMPERATURE FLUID RESISTIVITY | | | | |
| PERMANENT DATUM | | ELEVATION | | K.B. | | | | | |
| LOG MEAS. FROM GROUND LEVEL | | ABOVE PERM. DATUM | | D.F. | | | | | |
| DRILLING MEAS. FROM GROUND LEVEL | | G.L. | | | | | | | |
| DATE | 1-26-18 | TYPE FLUID IN HOLE | | MUD | | | | | |
| RUN No | 1 | MUD WEIGHT | | N/A | | | | | |
| TYPE LOG | VOLUME CALCULATION | VISCOSITY | | N/A | | | | | |
| DEPTH-DRILLER | 1244 FT. | LEVEL | | FULL | | | | | |
| DEPTH-LOGGER | 1030 FT. | MAX. REC. TEMP. | | 24.30 DEG. C | | | | | |
| BTM LOGGED INTERVAL | 1030 FT. | IMAGE ORIENTED TO: | | N/A | | | | | |
| TOP LOGGED INTERVAL | SURFACE | SAMPLE INTERVAL | | 0.2 FT. | | | | | |
| DRILLER / RIG# | HYDRO RESOURCES | LOGGING TRUCK | | TRUCK #900 | | | | | |
| RECORDED BY / Logging Eng. | A. OLSON | TOOL STRING/SN | | COMPROBE 2 1/8" SN 6555 | | | | | |
| WITNESSED BY | SAM - H&A | LOG TIME:ON SITE/OFF SITE | | 5:20 A.M. | | | | | |
| BOREHOLE RECORD | | | | | | | | | |
| NO. | BIT | FROM | TO | SIZE | WGT. | FROM | TO | | |
| 1 | 7 IN. | SURFACE | 40 FT. | 24 IN. | STEEL | SURFACE | 40 FT. | | |
| 2 | 20 IN. | 40 FT. | 500 FT. | 14 IN. | STEEL | SURFACE | 500 FT. | | |
| 3 | 12 1/4 IN. | 500 FT. | TOTAL DEPTH | | | | | | |
| COMMENTS: | | | | | | | | | |
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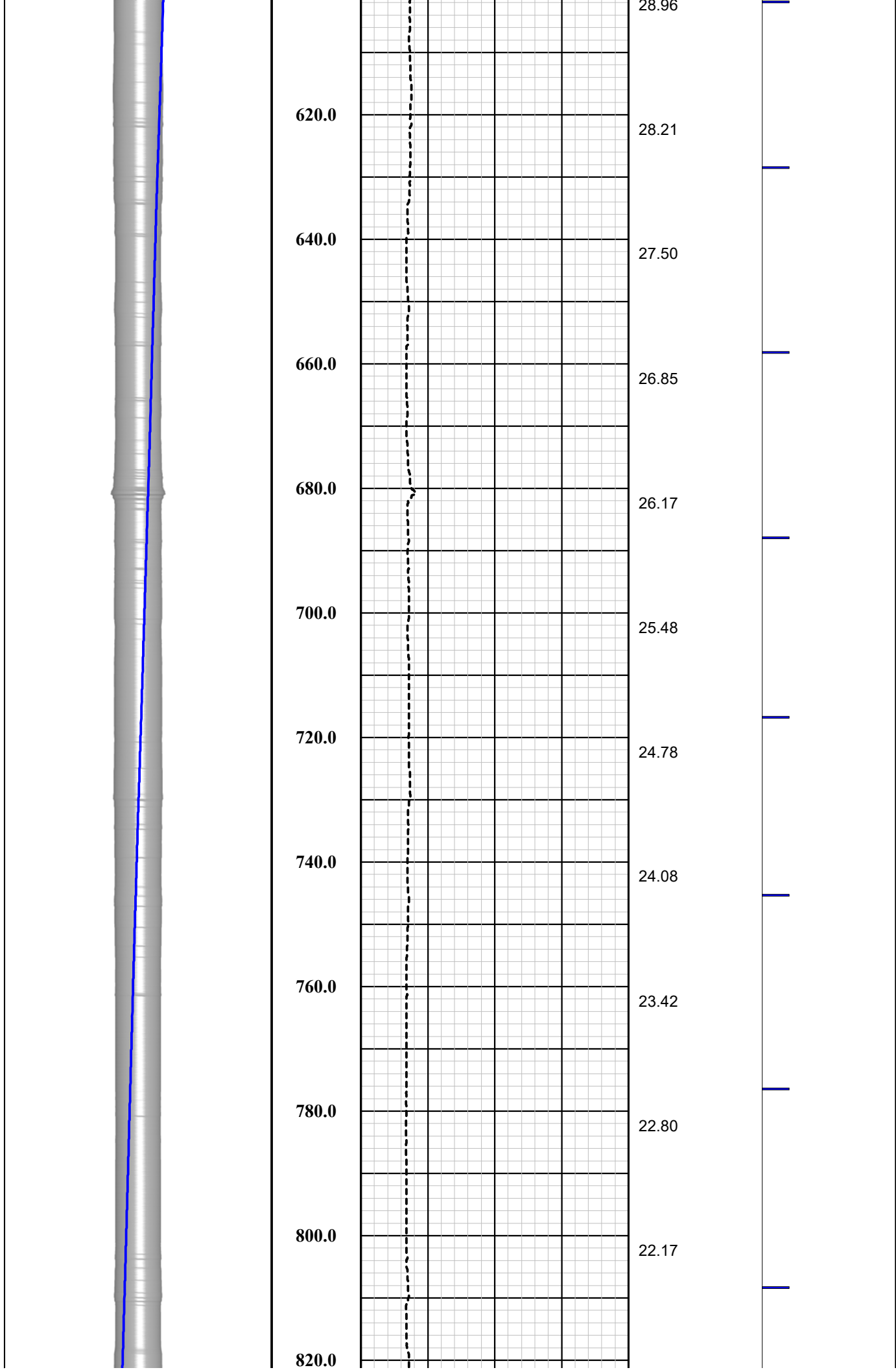
Disclaimer:

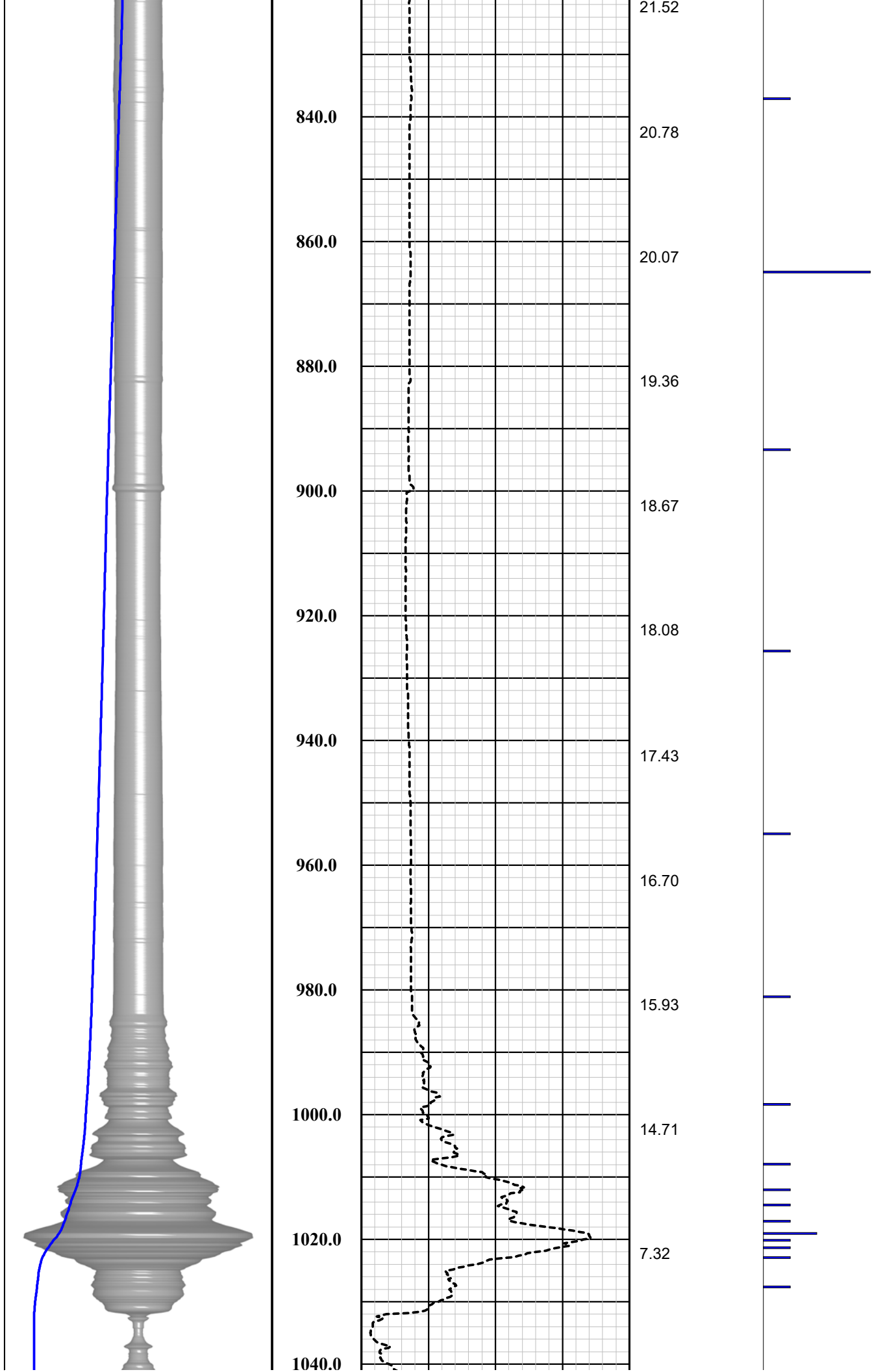
All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

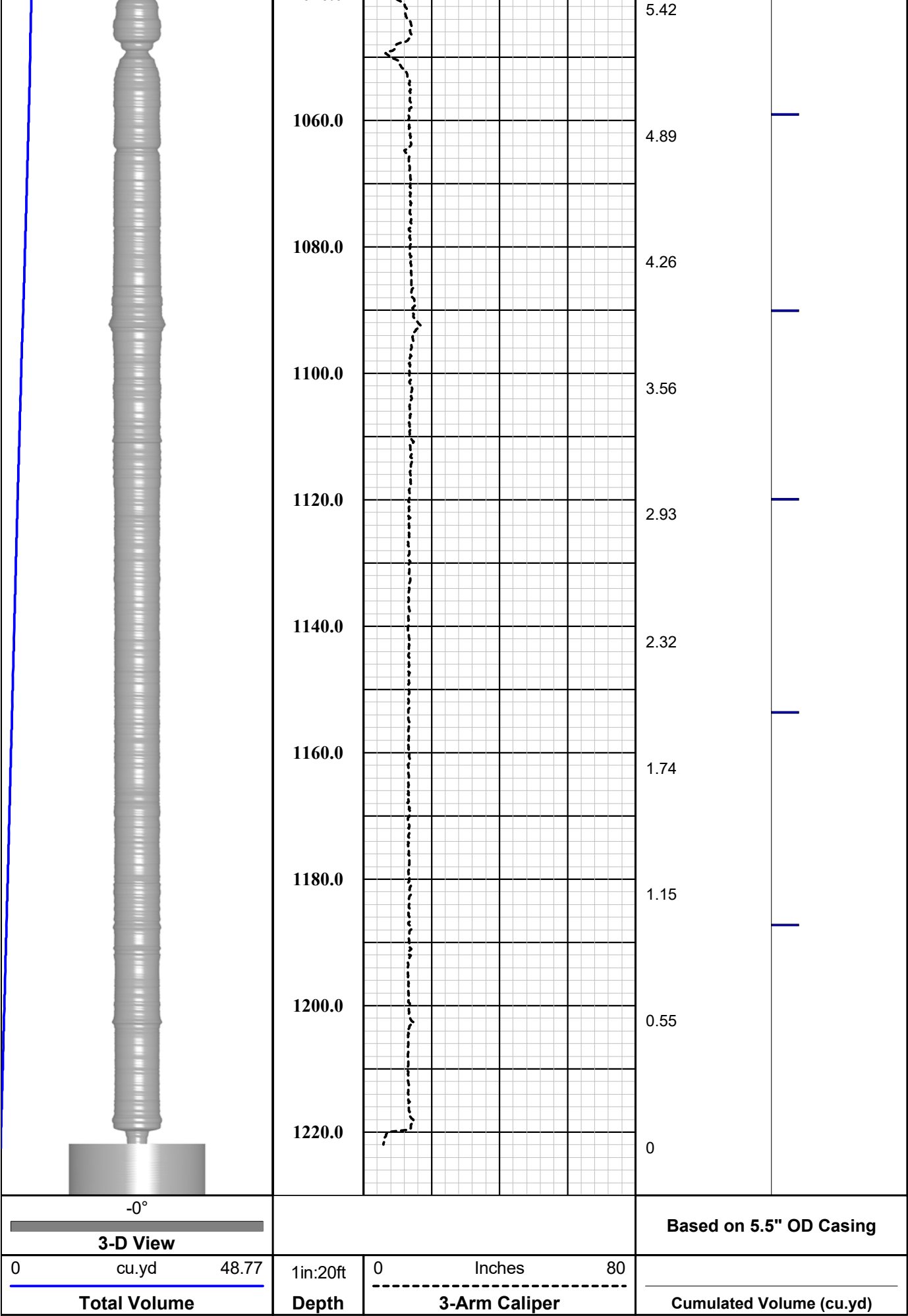








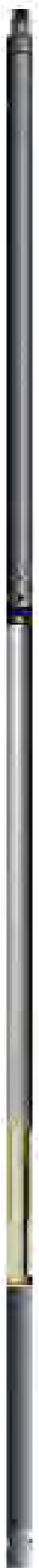




MSI Gamma-Caliper-Temperature-Fluid Resistivity

MSI Gamma Ray, Caliper, Temperature, Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft

Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)

Pressure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter



**Southwest Exploration
Services, LLC**

borehole geophysics & video services

Company FLORENCE COPPER

Well R-02
Field FLORENCE COPPER
County PINAL
State ARIZONA

Final

Caliper w / Volume Calculation Summary

Drift Report

Wellbore DRIFT Interpretation

PREPARED ESPECIALLY FOR

FLORENCE COPPER

R-02

Saturday - November 4, 2017



This Wellbore Interpretation Package represents our best efforts to provide a correct interpretation. Nevertheless, since all interpretations are opinions based on inferences from electrical or other types of measurements, we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by Customer resulting from any interpretation made by this document. We do not warrant or guarantee the accuracy of the data, specifically including (but without limitations) the accuracy of data transmitted by electronic process, and we will not be responsible for accidental or intentional interception of such data by third parties. Our employees are not empowered to change or otherwise modify the attached interpretation. Furthermore, along with Eagle Pro Software we do not warrant or guarantee the accuracy of the programming techniques employed to produce this document. By accepting this Interpretation Package, the Customer agrees to the foregoing, and to our General Terms and Conditions.

Southwest Exploration Services, LLC
(480) 926-4558

WELLBORE DRIFT INTERPRETATION

Southwest Exploration Services, LLC

(480) 926-4558

| | | | | | | | | | | | | | | | | | | |
|--------------|-----------------|--------------|-----------------------------|--------------|--------------------------------|---------------------------------|-----------|----------|-------------|----------|--------------|-----------|-------|--|--|-------|--|--|
| Company: | FLORENCE COPPER | | | Well Owner: | | | | | | | | | | | | | | |
| County: | PINAL | State: | Arizona | | Country: | USA | | | | | | | | | | | | |
| Well Number: | R-02 | Survey Date: | Saturday - November 4, 2017 | | Magnetic Declination: | Declination Correction Not Used | | | | | | | | | | | | |
| Field: | | | | | Drift Calculation Methodology: | Balanced Tangential Method | | | | | | | | | | | | |
| Location: | | | | | | | | | | | | | | | | | | |
| Remarks: | | | | | | | | | | | | | | | | | | |
| Witness: | SCOTT - H&A | Vehicle No.: | 200 | Invoice No.: | | | Operator: | A. OLSON | Well Depth: | 500 Feet | Casing size: | 20 Inches | | | | | | |
| Tool: | Compass - 6002 | | | Lat.: | | | Long.: | | | Sec.: | | | Twp.: | | | Rge.: | | |

| MEASURED DATA | | | DATA COMPUTATIONS | | | | | | |
|-----------------|--------------------------|----------------------|-------------------|----------------------|-----------------------|--|---|----------------------|------------------------|
| DEPTHS, feet | INCLINATIONS, degrees | AZIMUTHS, degrees | TVD, feet | T. LATITUDE, feet | T. LONGITUDE, feet | DOGLEG SEV., degrees per 20 Feet | DOGLEG SEV., degrees per 100 feet | DRIFT DIST., feet | DRIFT BGR., degrees |
| 0 | 0.13 | 354.13 | 0.00 | | | | | | |
| 20 | 0.04 | 294.69 | 19.99 | 0.025 | -0.009 | 1.00 | 1.54 | 0.03' (.36") | 341.20 |
| 40 | 0.16 | 209.16 | 39.98 | 0.004 | -0.029 | 0.41 | 2.11 | 0.03' (.36") | 277.00 |
| 60 | 0.23 | 194.67 | 59.97 | -0.059 | -0.053 | 0.96 | 0.39 | 0.08' (.96") | 221.70 |
| 80 | 0.28 | 166.82 | 79.96 | -0.145 | -0.052 | 0.84 | 0.75 | 0.15' (1.80") | 199.70 |
| 100 | 0.39 | 154.90 | 99.96 | -0.254 | -0.012 | 0.42 | 0.32 | 0.25' (3.00") | 182.70 |
| 120 | 0.16 | 182.85 | 119.95 | -0.344 | 0.015 | 0.13 | 0.75 | 0.34' (4.08") | 177.40 |
| 140 | 0.36 | 289.12 | 139.94 | -0.351 | -0.046 | 0.43 | 2.49 | 0.35' (4.20") | 187.40 |
| 160 | 0.30 | 014.14 | 159.93 | -0.280 | -0.093 | 0.83 | 2.10 | 0.29' (3.48") | 198.30 |
| 180 | 0.30 | 201.76 | 179.92 | -0.278 | -0.100 | 0.95 | 3.10 | 0.30' (3.60") | 199.70 |
| 200 | 0.19 | 319.50 | 199.91 | -0.301 | -0.141 | 0.37 | 2.66 | 0.33' (3.96") | 205.10 |
| 220 | 0.32 | 333.61 | 219.90 | -0.226 | -0.187 | 1.00 | 0.38 | 0.29' (3.48") | 219.70 |
| 240 | 0.21 | 226.29 | 239.89 | -0.201 | -0.238 | 1.00 | 2.50 | 0.31' (3.72") | 229.80 |
| 260 | 0.28 | 301.70 | 259.88 | -0.201 | -0.306 | 0.34 | 1.90 | 0.37' (4.44") | 236.80 |
| 280 | 0.30 | 003.11 | 279.87 | -0.123 | -0.345 | 0.93 | 1.59 | 0.37' (4.44") | 250.40 |
| 300 | 0.26 | 286.77 | 299.86 | -0.058 | -0.386 | 0.78 | 1.92 | 0.39' (4.68") | 261.50 |
| 320 | 0.38 | 236.76 | 319.85 | -0.081 | -0.485 | 0.53 | 1.31 | 0.49' (5.88") | 260.50 |
| 340 | 0.46 | 181.29 | 339.84 | -0.198 | -0.542 | 0.00 | 1.45 | 0.58' (6.96") | 250.00 |

Page No. 1

True Vertical Depth: 499.76'

Final Drift Distance: .82' (9.84")

Final Drift Bearing: 203.20°

Note: Magnetic Declination is not used because it is not a factor in the calculation of well drift or alignment. Magnetic Declination is only important if attempting to hit a target or miss another well and then it is included in the calculations.

1 (480) 926-4558

[illegible]

Final Drift Bearing: 203.20°

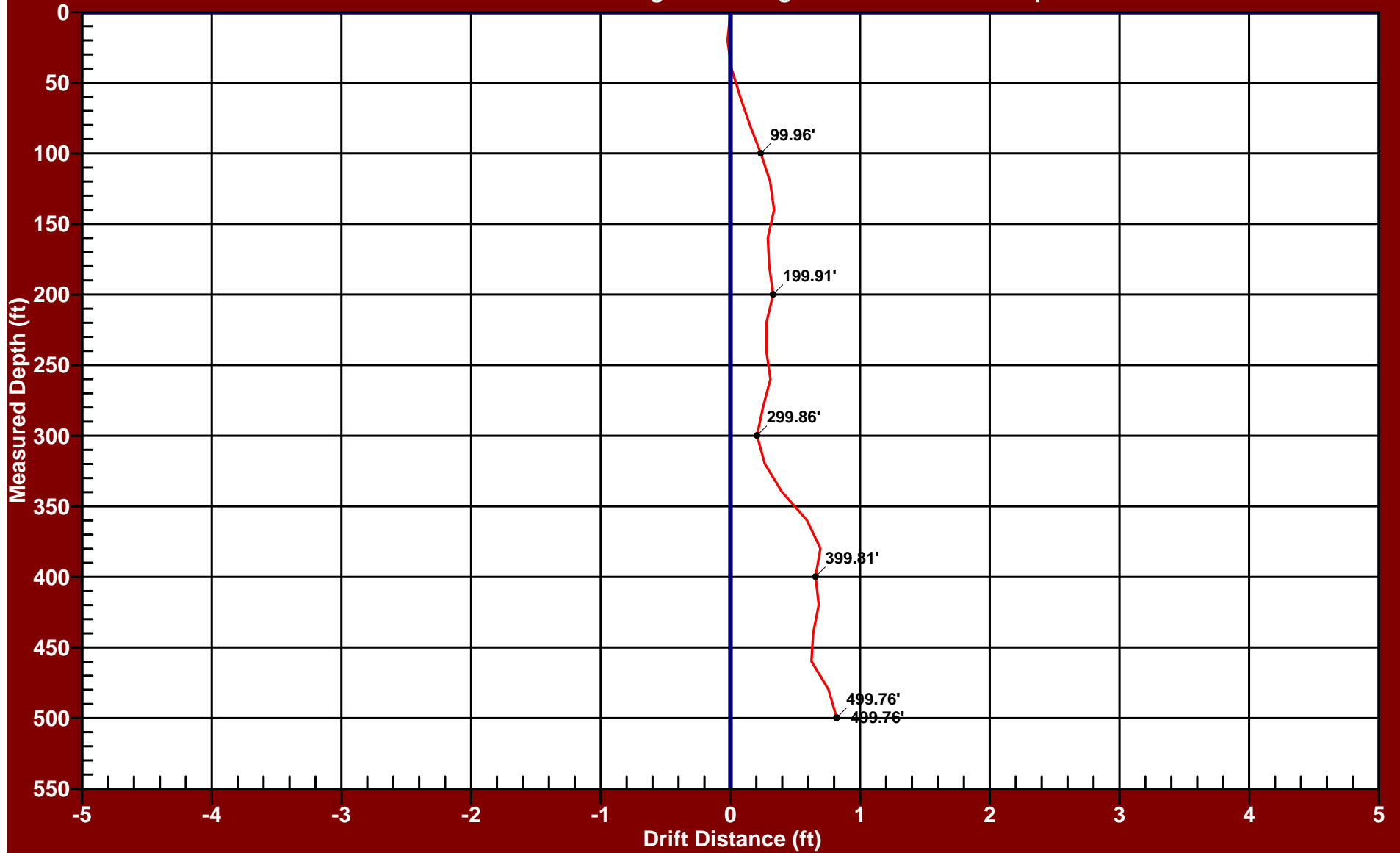
PLANE OF DRIFT VIEW - R-02

FLORENCE COPPER

Drift Distance = 0.82 Feet

Drift Bearing = 203.2 Degrees

True Vertical Depth = 499.76 Feet



Date of Survey: Saturday - November 4, 2017

Balanced Tangential Calculation Method

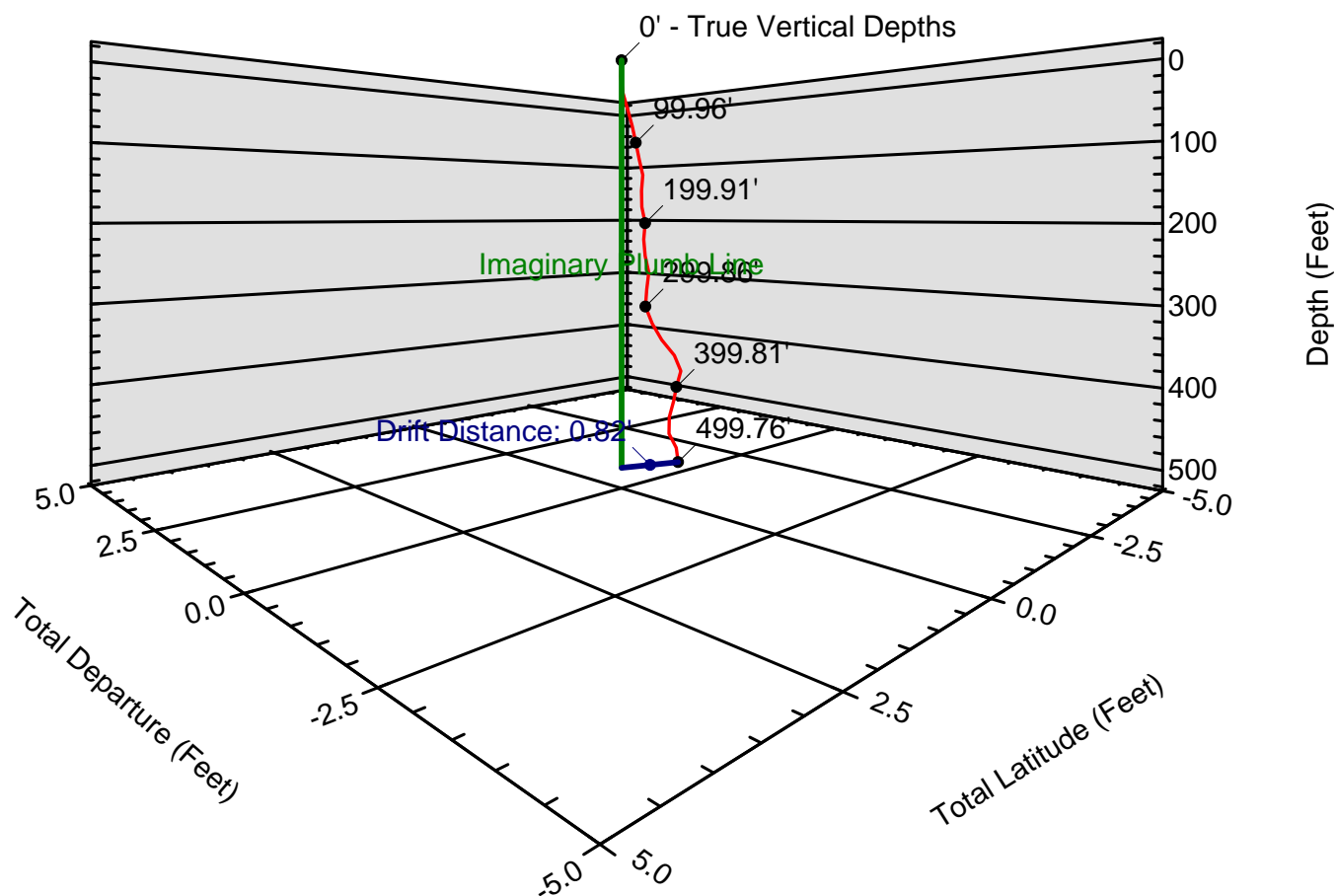
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3D PROJECTION VIEW - R-02

FLORENCE COPPER

Drift Distance = 0.82 Feet Drift Bearing = 203.2 Degrees True Vertical Depth = 499.76 Feet

46.0



Date of Survey: Saturday - November 4, 2017

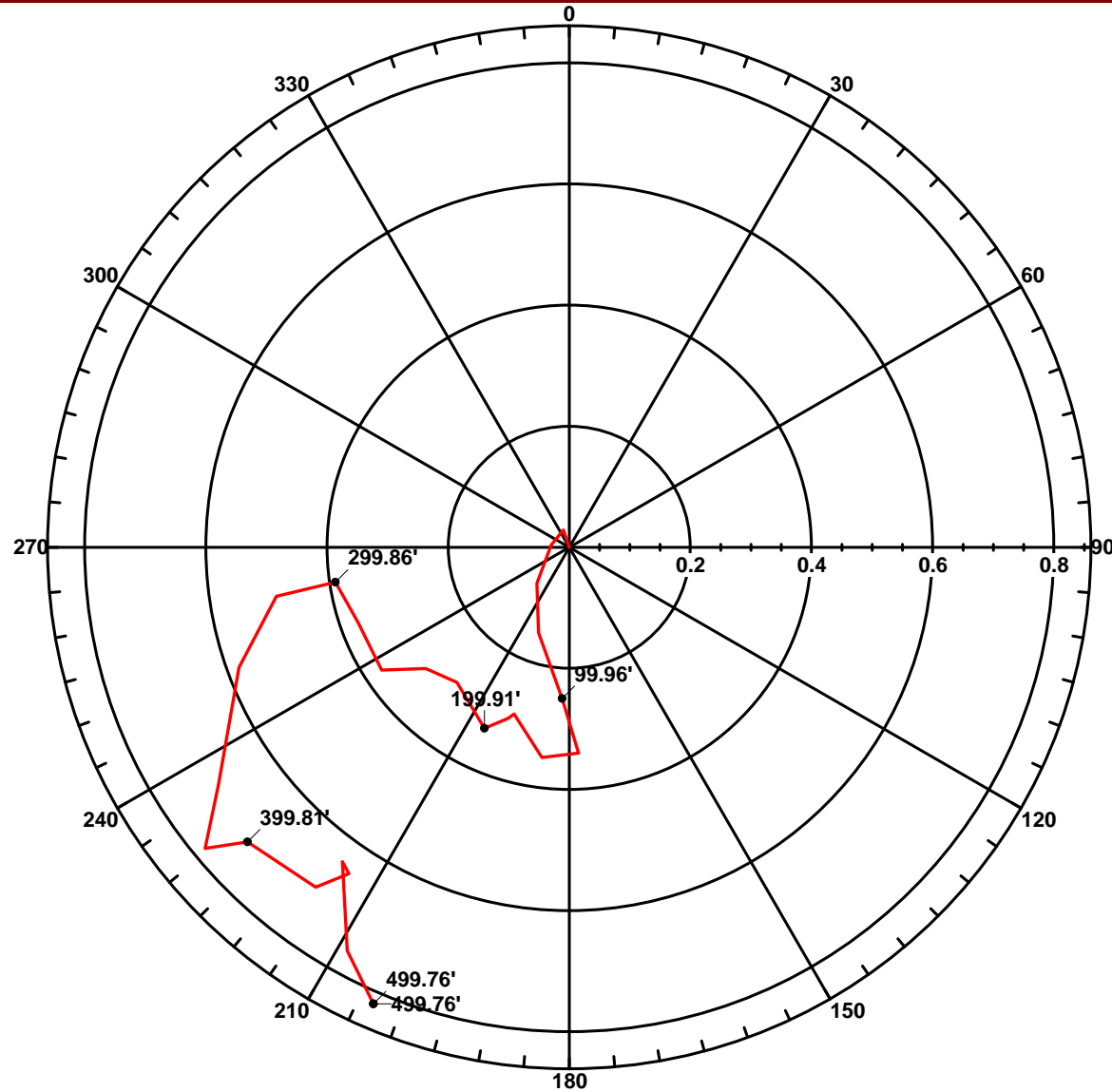
Balanced Tangential Calculation Method

Southwest Exploration Services, LLC (480) 926-4558

POLAR VIEW - R-02

FLORENCE COPPER

Drift Distance = 0.82 Feet Drift Bearing = 203.2 Degrees True Vertical Depth = 499.76 Feet



Date of Survey: Saturday - November 4, 2017

Balanced Tangential Calculation Method

Southwest Exploration Services, LLC (480) 926-4558

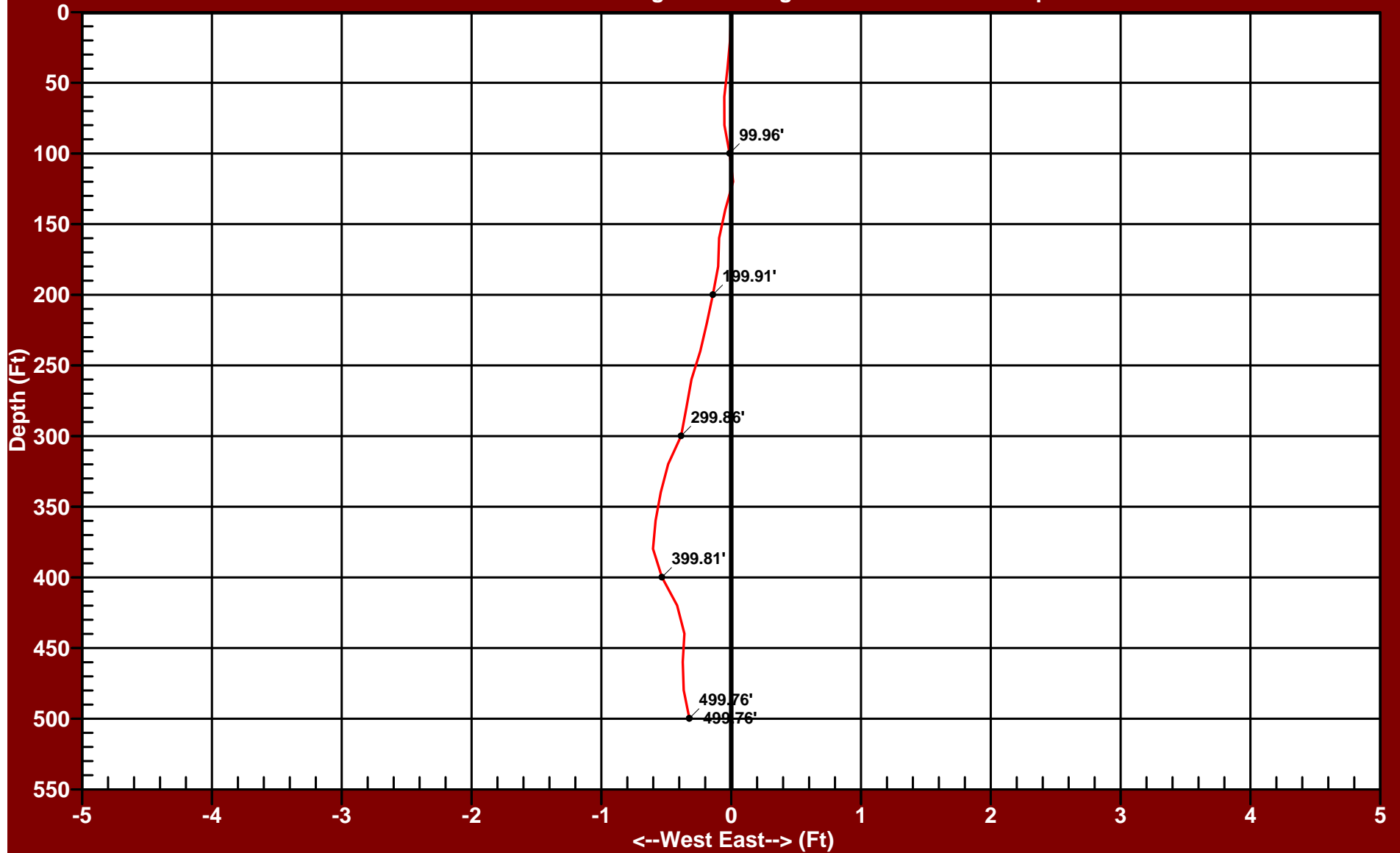
EASTING RECTANGULAR VIEW - R-02

FLORENCE COPPER

Drift Distance = 0.82 Feet

Drift Bearing = 203.2 Degrees

True Vertical Depth = 499.76 Feet



Date of Survey: Saturday - November 4, 2017

Balanced Tangential Calculation Method

Southwest Exploration Services, LLC (480) 926-4558

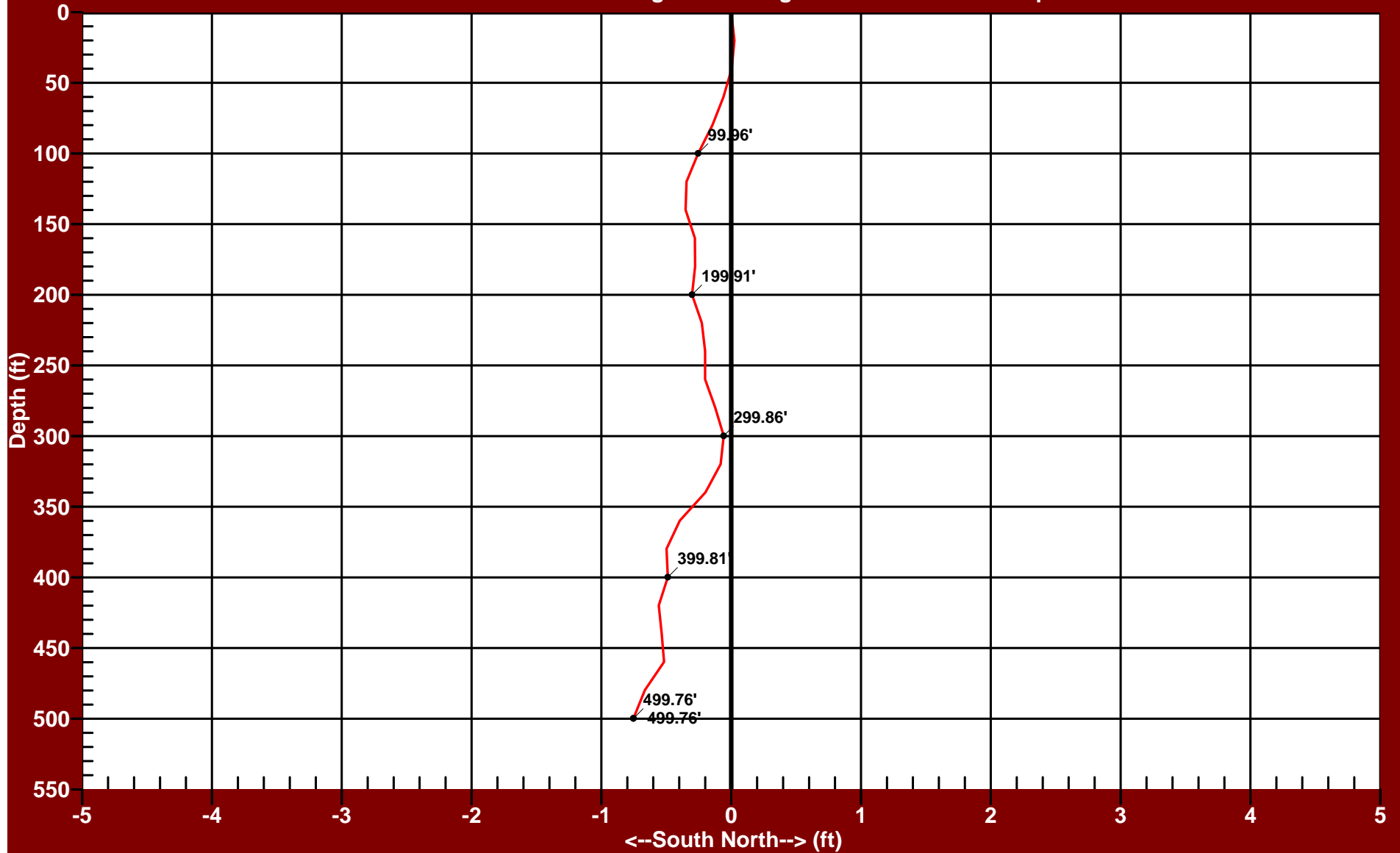
NORTHING RECTANGULAR VIEW - R-02

FLORENCE COPPER

Drift Distance = 0.82 Feet

Drift Bearing = 203.2 Degrees

True Vertical Depth = 499.76 Feet



Date of Survey: Saturday - November 4, 2017

Balanced Tangential Calculation Method

Southwest Exploration Services, LLC (480) 926-4558

Drift Report

Wellbore DRIFT Interpretation

PREPARED ESPECIALLY FOR

FLORENCE COPPER

R-02

Friday - January 26, 2018



This Wellbore Interpretation Package represents our best efforts to provide a correct interpretation. Nevertheless, since all interpretations are opinions based on inferences from electrical or other types of measurements, we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by Customer resulting from any interpretation made by this document. We do not warrant or guarantee the accuracy of the data, specifically including (but without limitations) the accuracy of data transmitted by electronic process, and we will not be responsible for accidental or intentional interception of such data by third parties. Our employees are not empowered to change or otherwise modify the attached interpretation. Furthermore, along with Eagle Pro Software we do not warrant or guarantee the accuracy of the programming techniques employed to produce this document. By accepting this Interpretation Package, the Customer agrees to the foregoing, and to our General Terms and Conditions.

Southwest Exploration Services, LLC
(480) 926-4558

WELLBORE DRIFT INTERPRETATION

Southwest Exploration Services, LLC

(480) 926-4558

| | | | | | | | | | | | | | |
|--------------|-----------------|--------------|--------------|--------------------------------|----------------------------|-----------------------|---------------------------------|-------------|-----------|--------------|--------------|-------|--|
| Company: | FLORENCE COPPER | | | Well Owner: | | | | | | | | | |
| County: | PINAL | State: | Arizona | | Country: | United States | | | | | | | |
| Well Number: | R-02 | | Survey Date: | Friday - January 26, 2018 | | Magnetic Declination: | Declination Correction Not Used | | | | | | |
| Field: | FLORENCE COPPER | | | Drift Calculation Methodology: | Balanced Tangential Method | | | | | | | | |
| Location: | | | | | | | | | | | | | |
| Remarks: | | | | | | | | | | | | | |
| Witness: | SAM - H&A | Vehicle No.: | 900 | Invoice No.: | | Operator: | A. OLSON | Well Depth: | 1020 Feet | Casing size: | 12.25 Inches | | |
| Tool: | Compass - 6002 | | | Lat.: | | Long.: | | Sec.: | | Twp.: | | Rge.: | |

| MEASURED DATA | | | DATA COMPUTATIONS | | | | | | |
|-----------------|--------------------------|----------------------|-------------------|----------------------|-----------------------|--|---|----------------------|------------------------|
| DEPTHS, feet | INCLINATIONS, degrees | AZIMUTHS, degrees | TVD, feet | T. LATITUDE, feet | T. LONGITUDE, feet | DOGLEG SEV., degrees per 20 Feet | DOGLEG SEV., degrees per 100 feet | DRIFT DIST., feet | DRIFT BGR., degrees |
| 500 | 0.35 | 227.14 | 500.00 | | | | | | |
| 520 | 0.19 | 215.81 | 519.99 | -0.068 | -0.064 | 0.95 | 0.63 | 0.09' (1.08") | 223.20 |
| 540 | 0.17 | 162.47 | 539.98 | -0.123 | -0.074 | 0.18 | 2.89 | 0.14' (1.68") | 211.20 |
| 560 | 0.26 | 174.58 | 559.97 | -0.196 | -0.061 | 0.37 | 0.68 | 0.21' (2.52") | 197.20 |
| 580 | 0.20 | 145.52 | 579.96 | -0.270 | -0.037 | 0.20 | 1.61 | 0.27' (3.24") | 187.80 |
| 600 | 0.33 | 137.06 | 599.95 | -0.341 | 0.022 | 0.94 | 0.47 | 0.34' (4.08") | 176.30 |
| 620 | 0.34 | 143.23 | 619.94 | -0.431 | 0.097 | 1.00 | 0.35 | 0.44' (5.28") | 167.30 |
| 640 | 1.10 | 118.23 | 639.93 | -0.569 | 0.302 | 0.58 | 1.39 | 0.64' (7.68") | 152.10 |
| 660 | 0.74 | 088.43 | 659.92 | -0.656 | 0.600 | 0.98 | 1.65 | 0.89' (10.68") | 137.60 |
| 680 | 0.89 | 078.68 | 679.91 | -0.622 | 0.881 | 0.99 | 0.55 | 1.08' (12.96") | 125.20 |
| 700 | 0.93 | 105.50 | 699.90 | -0.635 | 1.190 | 0.55 | 1.49 | 1.35' (16.20") | 118.10 |
| 720 | 0.66 | 103.67 | 719.89 | -0.706 | 1.458 | 0.99 | 0.10 | 1.62' (19.44") | 115.80 |
| 740 | 0.56 | 089.79 | 739.88 | -0.733 | 1.668 | 0.90 | 0.78 | 1.82' (21.84") | 113.70 |
| 760 | 0.38 | 087.82 | 759.87 | -0.730 | 1.832 | 0.33 | 0.11 | 1.97' (23.64") | 111.70 |
| 780 | 0.64 | 084.88 | 779.86 | -0.718 | 2.010 | 0.22 | 0.17 | 2.13' (25.56") | 109.60 |
| 800 | 0.93 | 086.39 | 799.85 | -0.698 | 2.283 | 0.36 | 0.09 | 2.39' (28.68") | 107.00 |
| 820 | 0.69 | 117.14 | 819.84 | -0.743 | 2.552 | 0.86 | 1.71 | 2.66' (31.92") | 106.20 |
| 840 | 0.66 | 114.08 | 839.83 | -0.845 | 2.764 | 0.96 | 0.17 | 2.89' (34.68") | 107.00 |

Page No. 1

True Vertical Depth: 1019.75'

Final Drift Distance: 4.94' (59.28")

Final Drift Bearing: 118.50°

Note: Magnetic Declination is not used because it is not a factor in the calculation of well drift or alignment. Magnetic Declination is only important if attempting to hit a target or miss another well and then it is included in the calculations.

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[illegible]

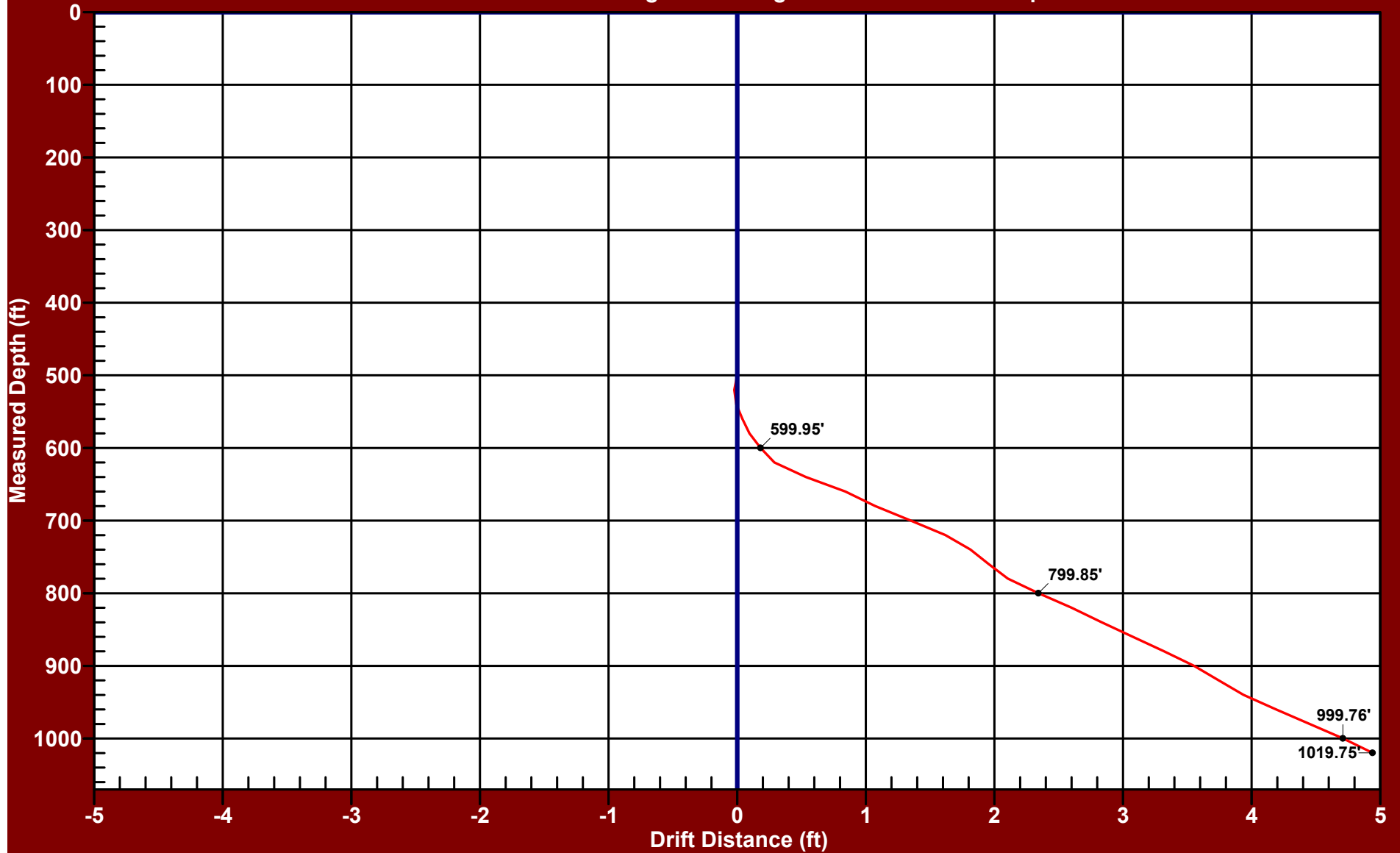
PLANE OF DRIFT VIEW - R-02

FLORENCE COPPER

Drift Distance = 4.94 Feet

Drift Bearing = 118.5 Degrees

True Vertical Depth = 1019.75 Feet



Date of Survey: Friday - January 26, 2018

Balanced Tangential Calculation Method

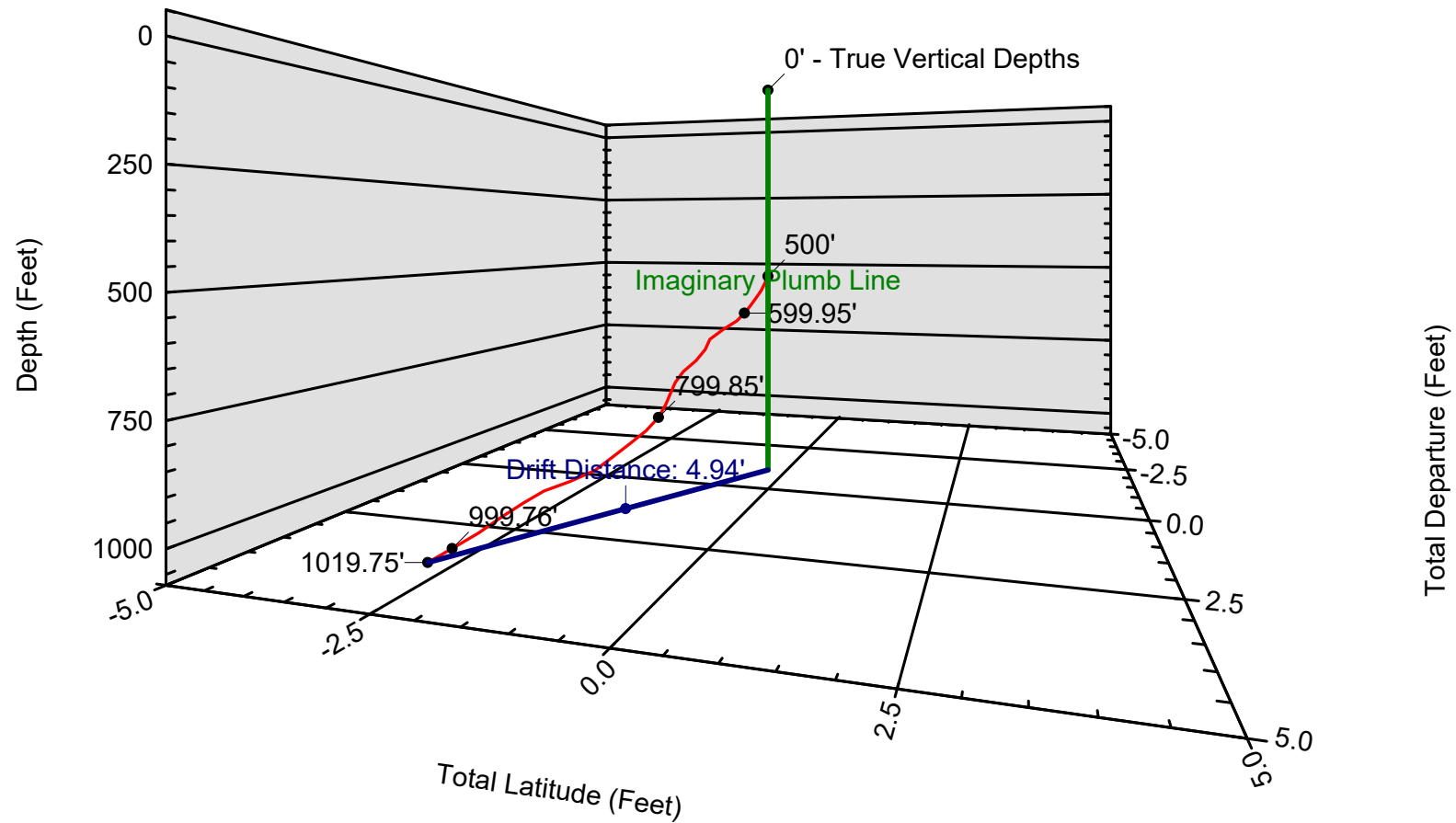
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3D PROJECTION VIEW - R-02

FLORENCE COPPER

Drift Distance = 4.94 Feet Drift Bearing = 118.5 Degrees True Vertical Depth = 1019.75 Feet

286.0



Date of Survey: Friday - January 26, 2018

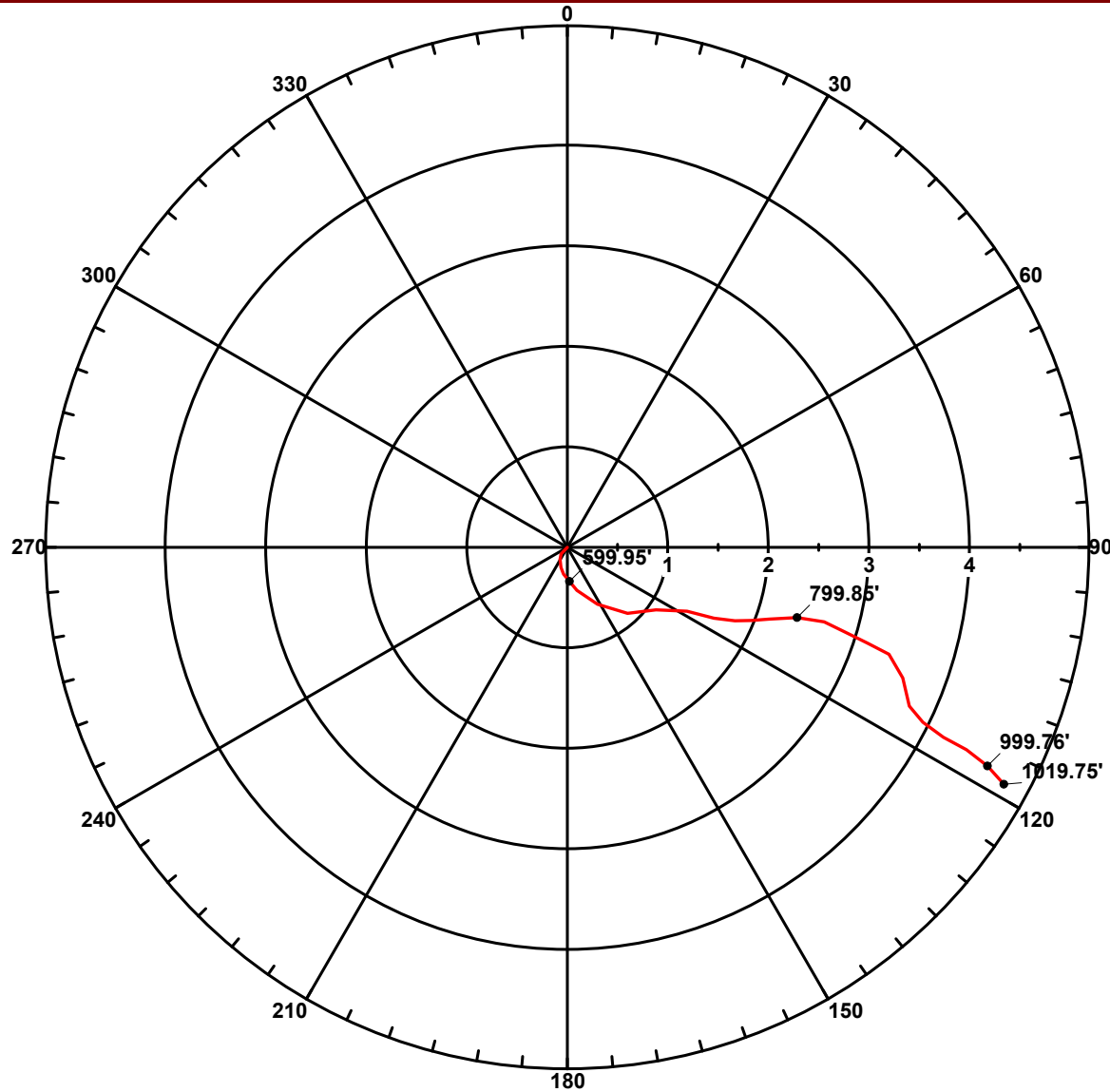
Balanced Tangential Calculation Method

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POLAR VIEW - R-02

FLORENCE COPPER

Drift Distance = 4.94 Feet Drift Bearing = 118.5 Degrees True Vertical Depth = 1019.75 Feet



Date of Survey: Friday - January 26, 2018

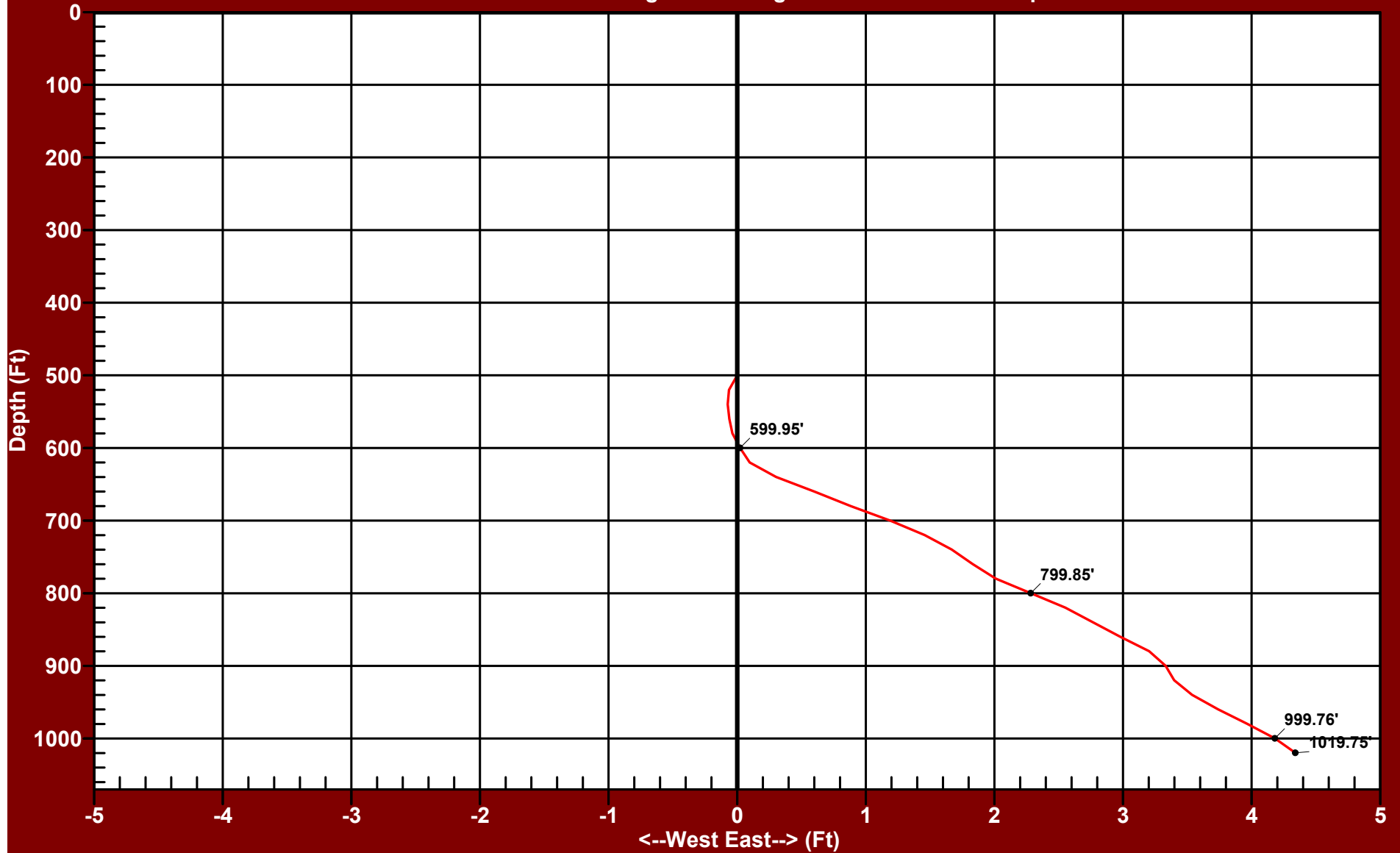
Balanced Tangential Calculation Method

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EASTING RECTANGULAR VIEW - R-02

FLORENCE COPPER

Drift Distance = 4.94 Feet Drift Bearing = 118.5 Degrees True Vertical Depth = 1019.75 Feet



Date of Survey: Friday - January 26, 2018

Balanced Tangential Calculation Method

Southwest Exploration Services, LLC (480) 926-4558

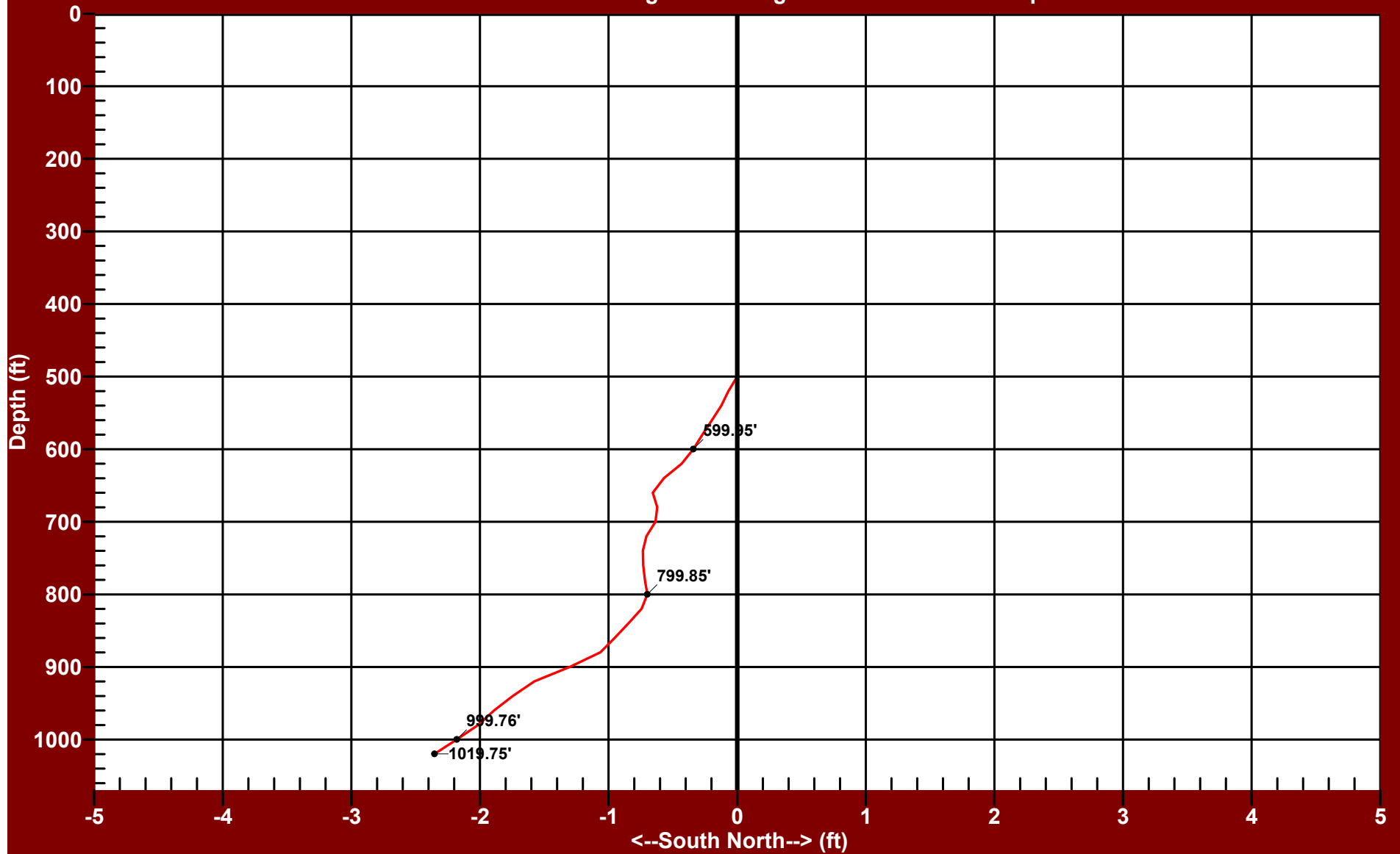
NORTHING RECTANGULAR VIEW - R-02

FLORENCE COPPER

Drift Distance = 4.94 Feet

Drift Bearing = 118.5 Degrees

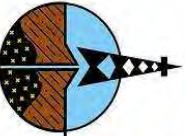
True Vertical Depth = 1019.75 Feet



Date of Survey: Friday - January 26, 2018

Balanced Tangential Calculation Method

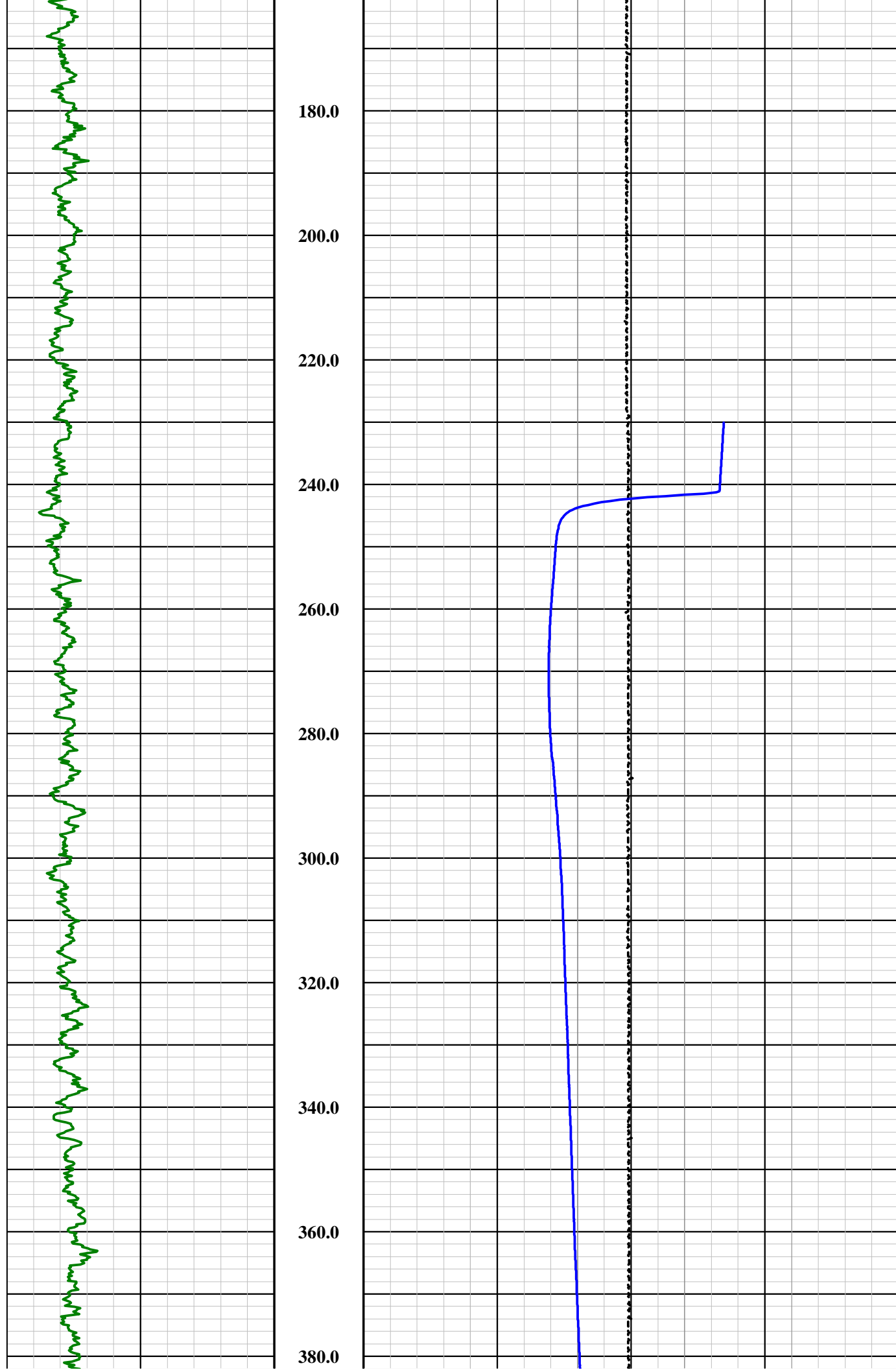
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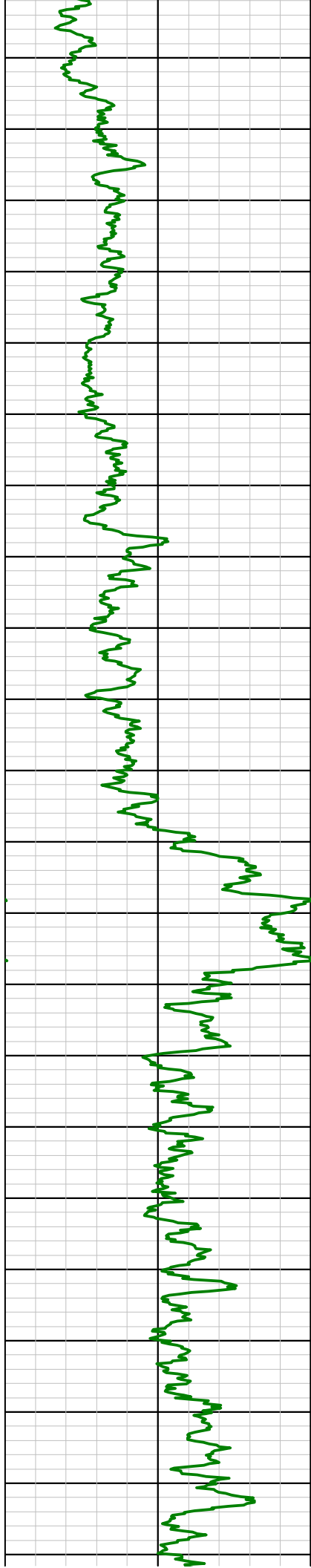


**Southwest Exploration
Services, LLC**
borehole geophysics & video services

| | | | | | | | |
|--|--|---------------------------|-----------------|-------------------------|-------|---------|-------------|
| PERMANENT DATUM LOG MEAS. FROM DRILLING MEAS. FROM | COMPANY | | FLORENCE COPPER | | | | |
| | WELL ID | | R-02 | | | | |
| | FIELD | | FLORENCE COPPER | | | | |
| | COUNTY | | PINAL | | | | |
| | STATE | | ARIZONA | | | | |
| | TYPE OF LOGS: GAMMA - CALIPER MORE: TEMPERATURE LOCATION | | | | | | |
| | SEC | TWP | RGE | | | | |
| | ELEVATION | | K.B. | | | | |
| | GROUND LEVEL | | D.F. | | | | |
| | GROUND LEVEL | | G.L. | | | | |
| DATE | 4-11-18 | TYPE FLUID IN HOLE | | FORMATION WATER | | | |
| RUN No | 1 | MUD WEIGHT | | N/A | | | |
| TYPE LOG | GAMMA - CALIPER - TEMP. | VISCOSITY | | N/A | | | |
| DEPTH-DRILLER | 1200 FT. | LEVEL | | ~ 240 FT. | | | |
| DEPTH-LOGGER | 1190 FT. | MAX. REC. TEMP. | | 41.73 DEG. C | | | |
| BTM LOGGED INTERVAL | 1190 FT. | IMAGE ORIENTED TO: | | N/A | | | |
| TOP LOGGED INTERVAL | SURFACE | SAMPLE INTERVAL | | 0.2 FT | | | |
| DRILLER / RIG# | HYDRO RESOURCES | LOGGING TRUCK | | TRUCK #750 | | | |
| RECORDED BY / Logging Eng. | A. OLSON / E. TURNER | TOOL STRING/SN | | MSI COMBO TOOL, SN 5446 | | | |
| WITNESSED BY | COLLIN - H&A | LOG TIME:ON SITE/OFF SITE | | 11:00 A.M. | | | |
| RUN | BOREHOLE RECORD | | CASING RECORD | | | | |
| NO. | BIT | FROM | TO | SIZE | WGT. | FROM | TO |
| 1 | ? | SURFACE | 40 FT. | 14" | STEEL | SURFACE | 500 FT. |
| 2 | 20" | 40 FT. | 500 FT. | 5" | FG | SURFACE | 500 FT. |
| 3 | 12 1/4" | 500 FT. | TOTAL DEPTH | 5" | PVC | 500 FT. | TOTAL DEPTH |
| COMMENTS: | | | | | | | |
| | | | | | | | |
| | | | | | | | |

| | | | | | |
|----------------------|----------------|-------------------|----------------|-------------------|---------------|
| Tool Summary: | | | | | |
| Date | 4-11-18 | Date | 4-11-18 | Date | 4-11-18 |
| Run No. | 1 | Run No. | 2 | Run No. | 3 |
| Tool Model | MSI COMBO TOOL | Tool Model | ALT 4 RX SONIC | Tool Model | COMPROBE 4 PI |
| Tool SN | 5446 | Tool SN | 4572 | Tool SN | 6009 |
| From | SURFACE | From | 200 FT. | From | SURFACE |
| To | 1190 FT. | To | 1190 FT. | To | 1190 FT. |
| Recorded By | A. OLSON | Recorded By | A. OLSON | Recorded By | A. OLSON |
| Truck No | 750 | Truck No | 750 | Truck No | 750 |
| Operation Check | 4-10-18 | Operation Check | 4-10-18 | Operation Check | 4-10-18 |
| Calibration Check | 4-10-18 | Calibration Check | N/A | Calibration Check | N/A |
| Time Logged | 9:30 A.M. | Time Logged | 10:30 A.M. | Time Logged | 11:15 A.M. |
| | | | | | |
| Date | 4-11-18 | Date | | Date | |
| Run No. | 4 | Run No. | 5 | Run No. | 6 |
| Tool Model | ALT QL DENSITY | Tool Model | | Tool Model | |
| Tool SN | 6187 | Tool SN | | Tool SN | |
| From | SURFACE | From | | From | |
| To | 1190 FT. | To | | To | |
| Recorded By | A. OLSON | Recorded By | | Recorded By | |
| Truck No | 750 | Truck No | | Truck No | |
| Operation Check | 4-10-18 | Operation Check | | Operation Check | |
| Calibration Check | 4-10-18 | Calibration Check | | Calibration Check | |
| Time Logged | 12:15 P.M. | Time Logged | | Time Logged | |
| Additional Comments: | | | | | |
| Caliper Arms Used: | | 9 IN. | | | |
| Calibration Points: | | 4 IN. & 12 IN. | | | |
| Tool Calibration: | | N/A | | | |
| Calibration Points: | | N/A | | | |





400.0

420.0

440.0

460.0

480.0

500.0

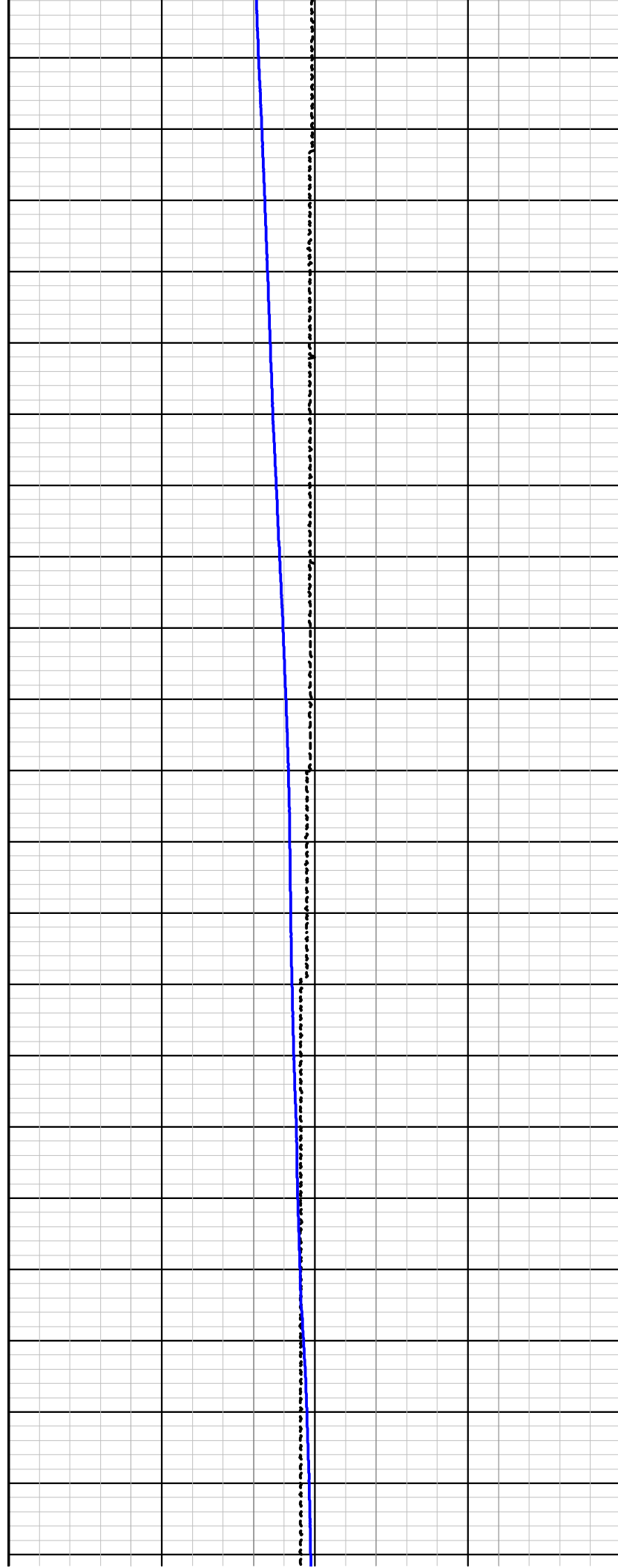
520.0

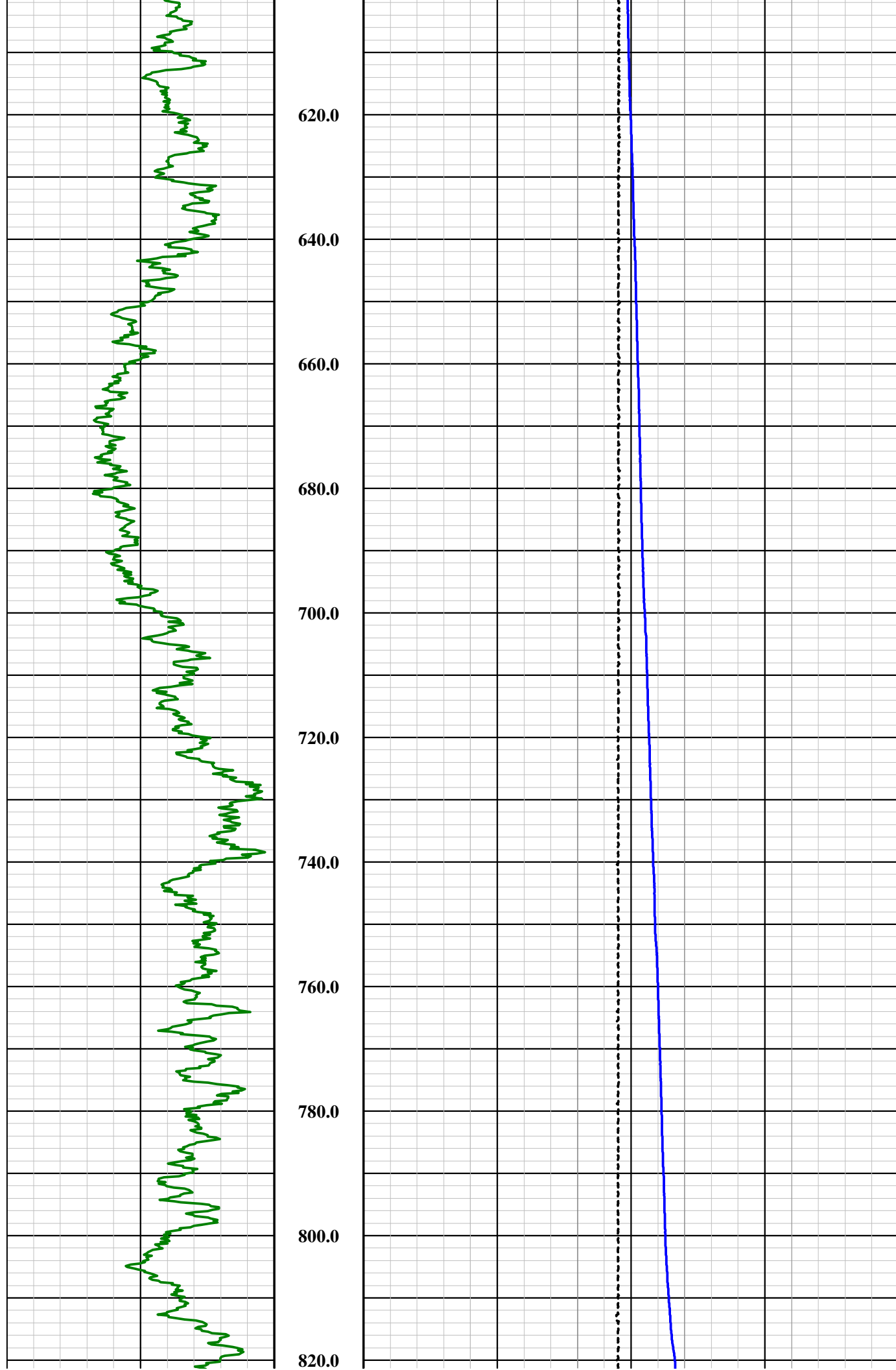
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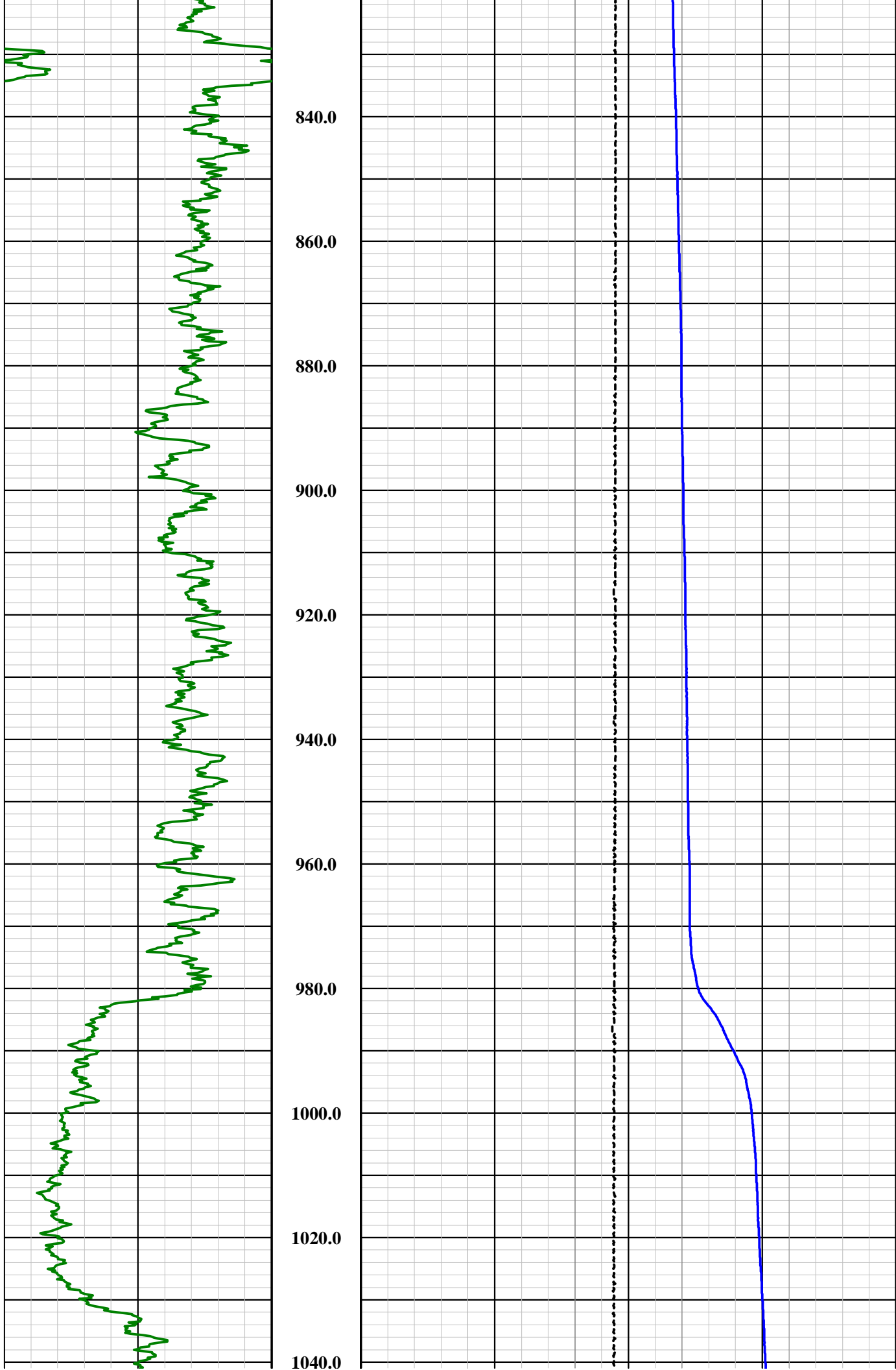
560.0

580.0

600.0







Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Final

GCT Summary

APPENDIX F

Cement Bond Log Summary

WELL R-02

Geophysical Log Summary

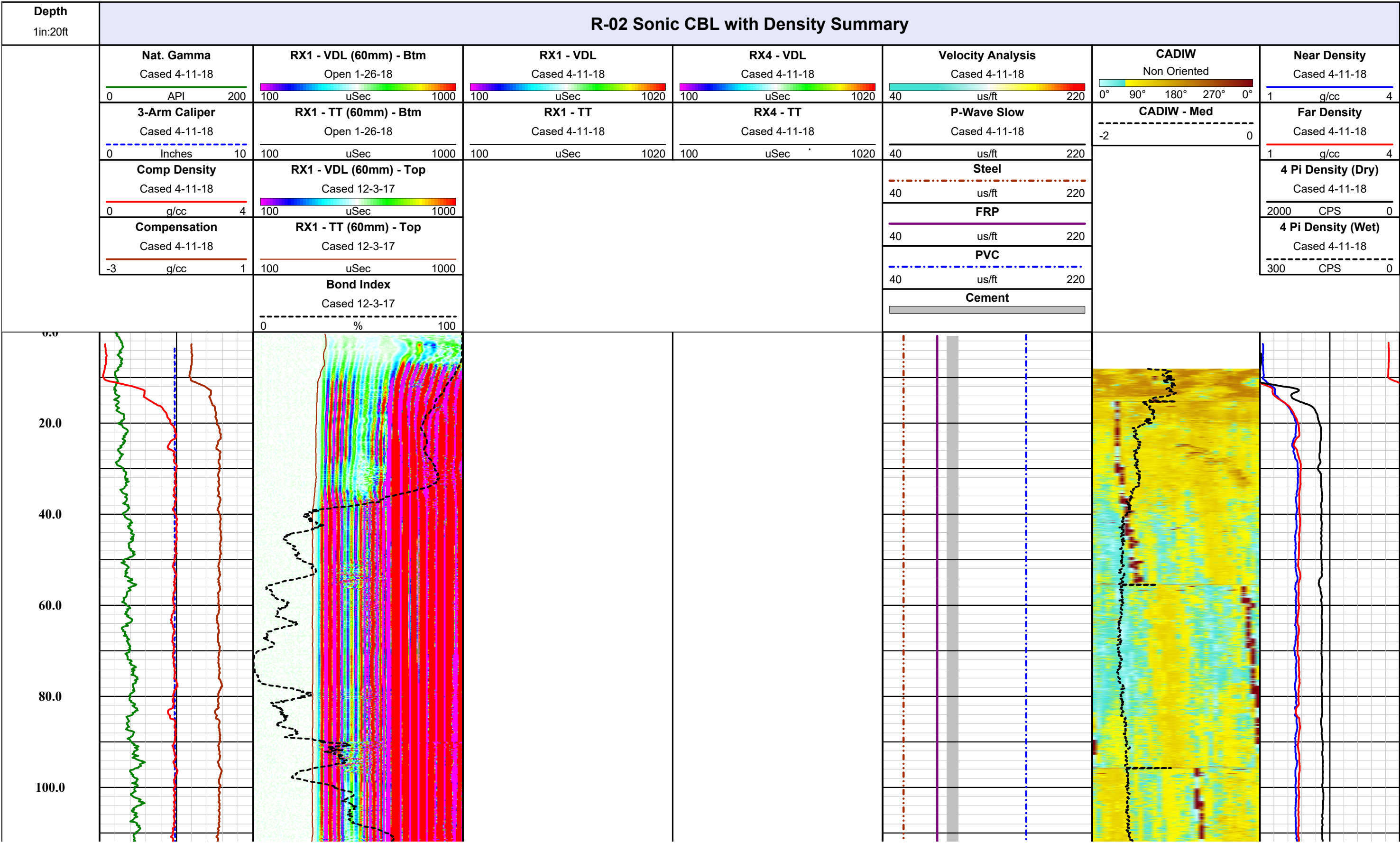


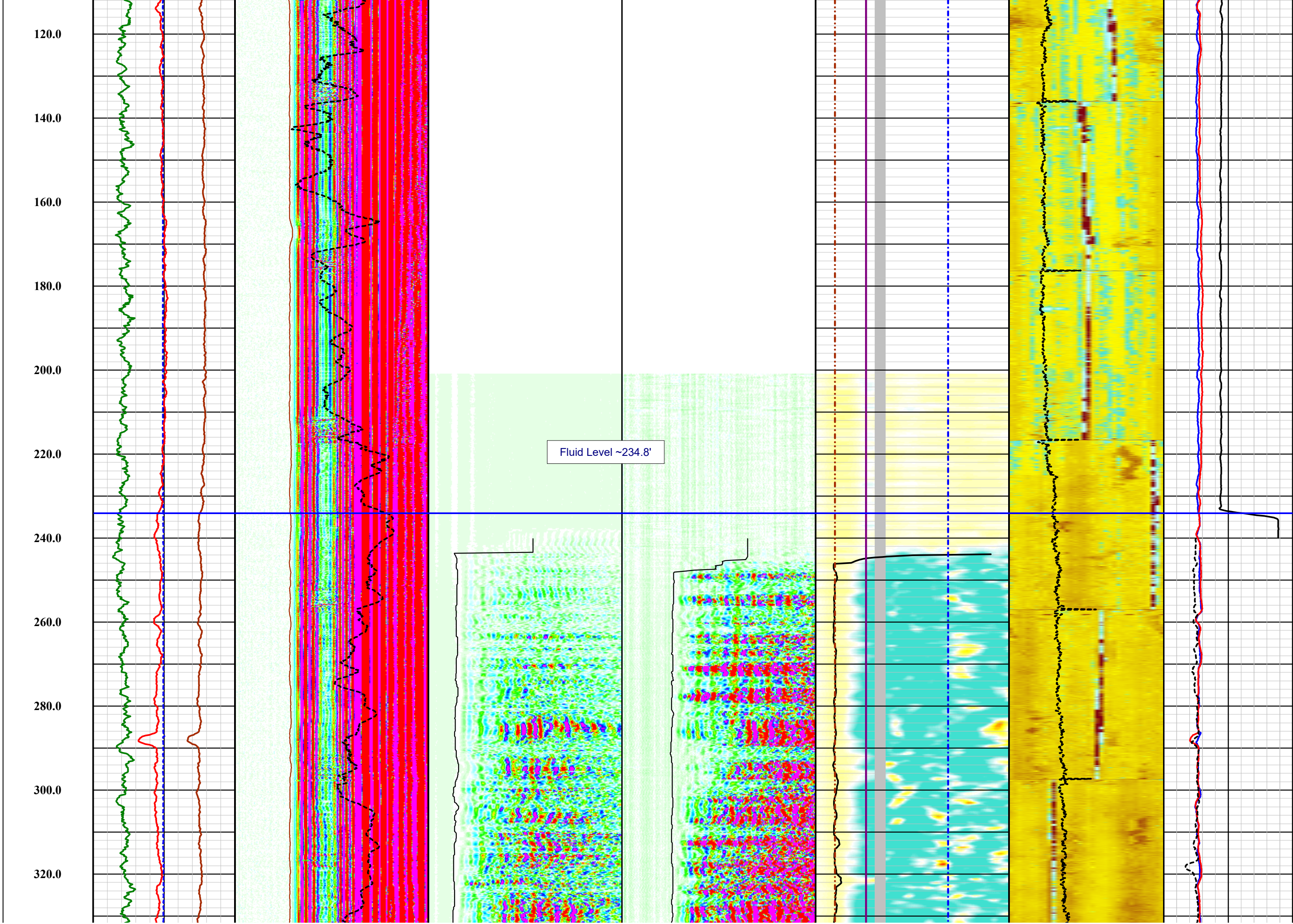
Southwest Exploration Services, LLC
borehole geophysics & video services

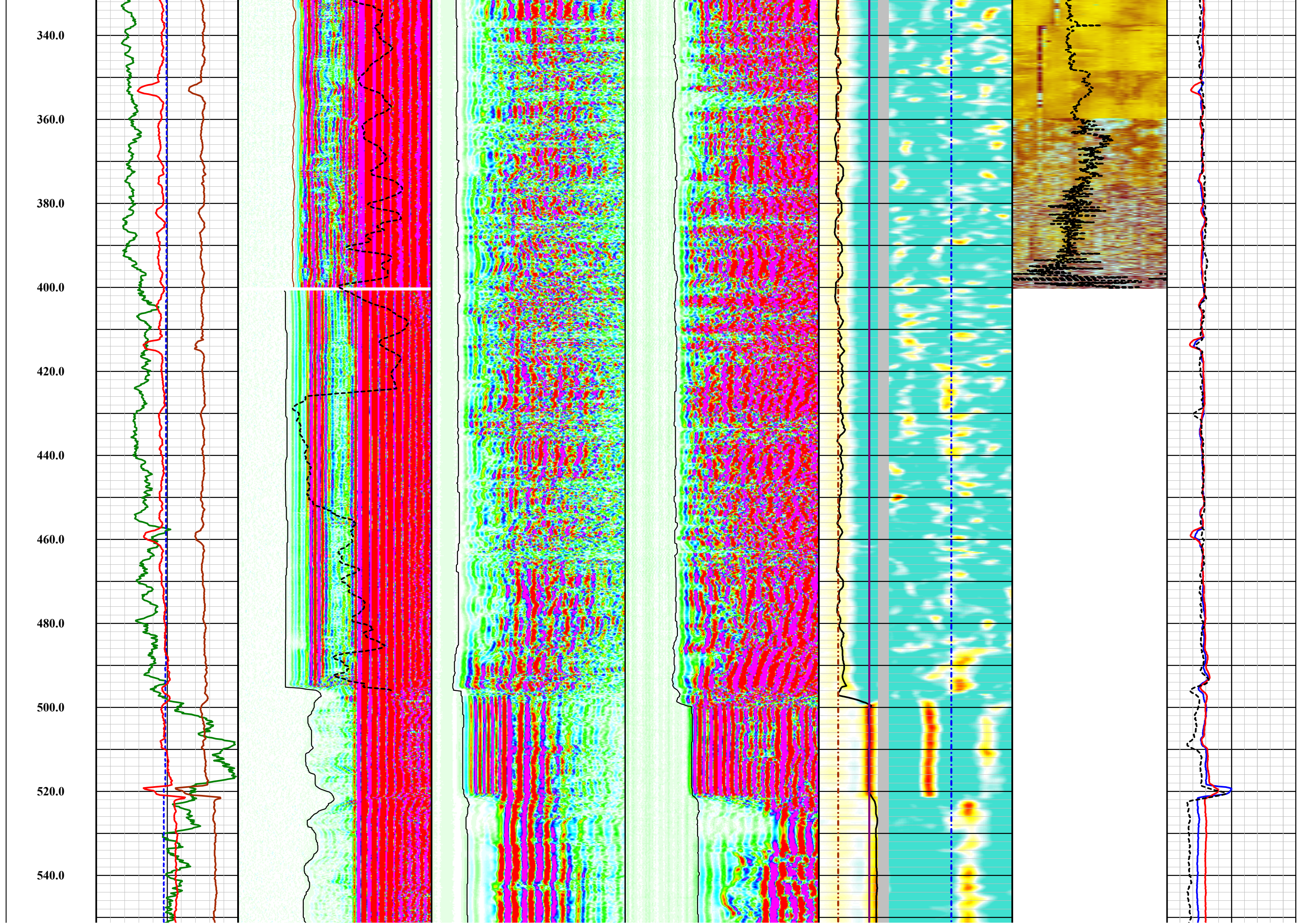


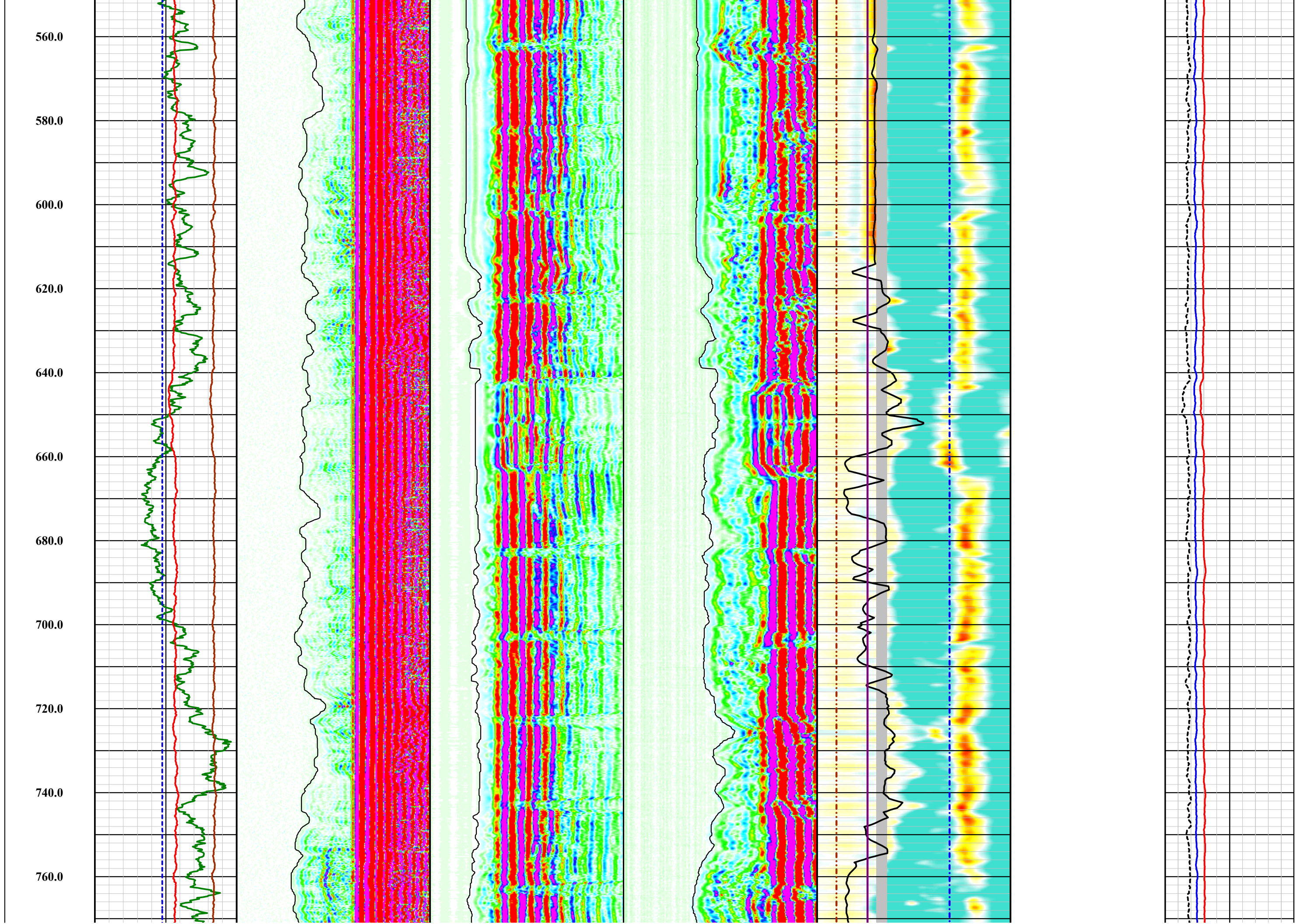
COMPANY: FLORENCE COPPER COMPANY
FIELD: FLORENCE COPPER SITE
WELL ID: R-02
COUNTY: PINAL STATE: ARIZONA

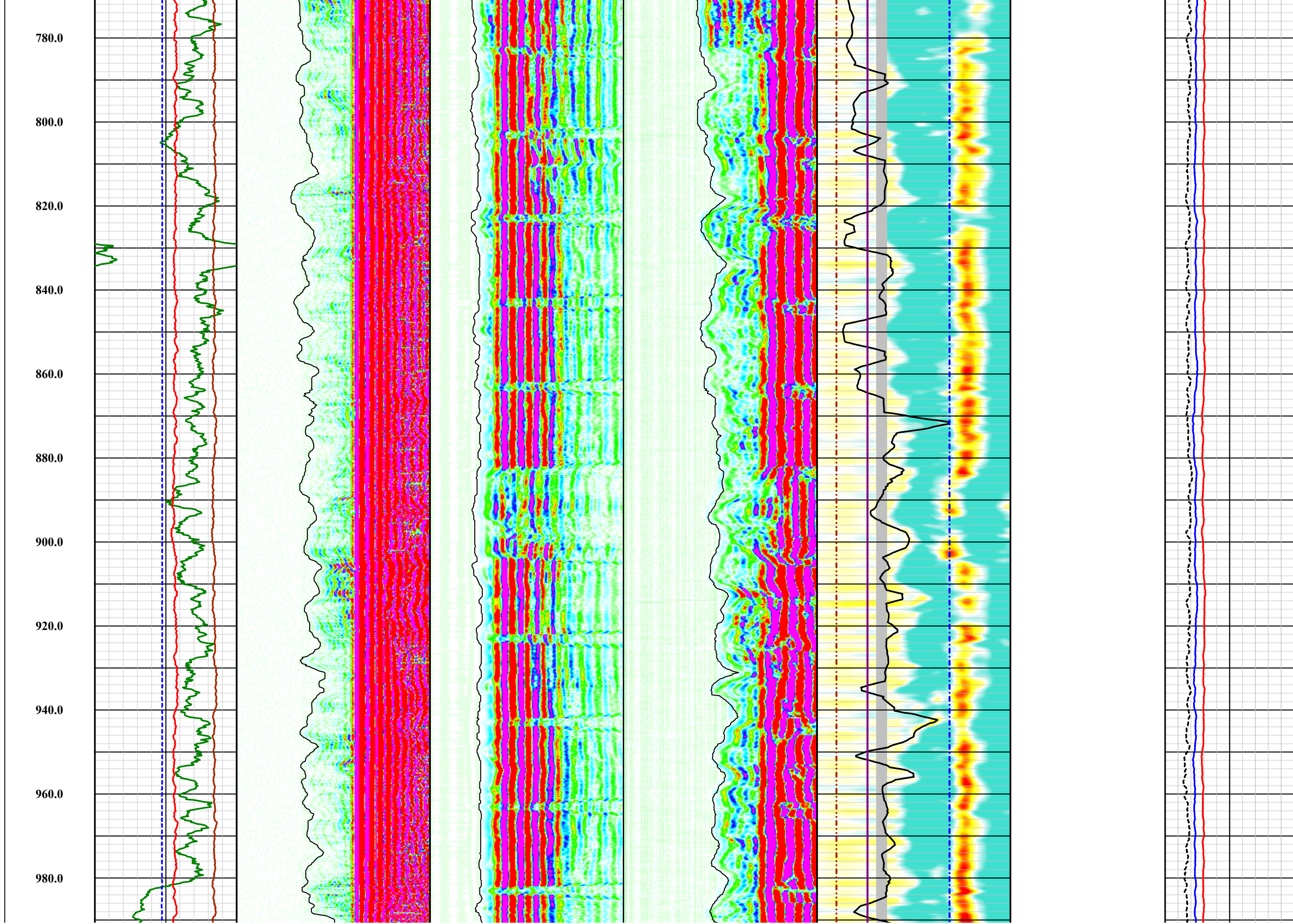
Logging Engineer: VARIOUS
Date Logged: VARIOUS
Processed By: K.M / B.C.
Date Processed: 07-18-18

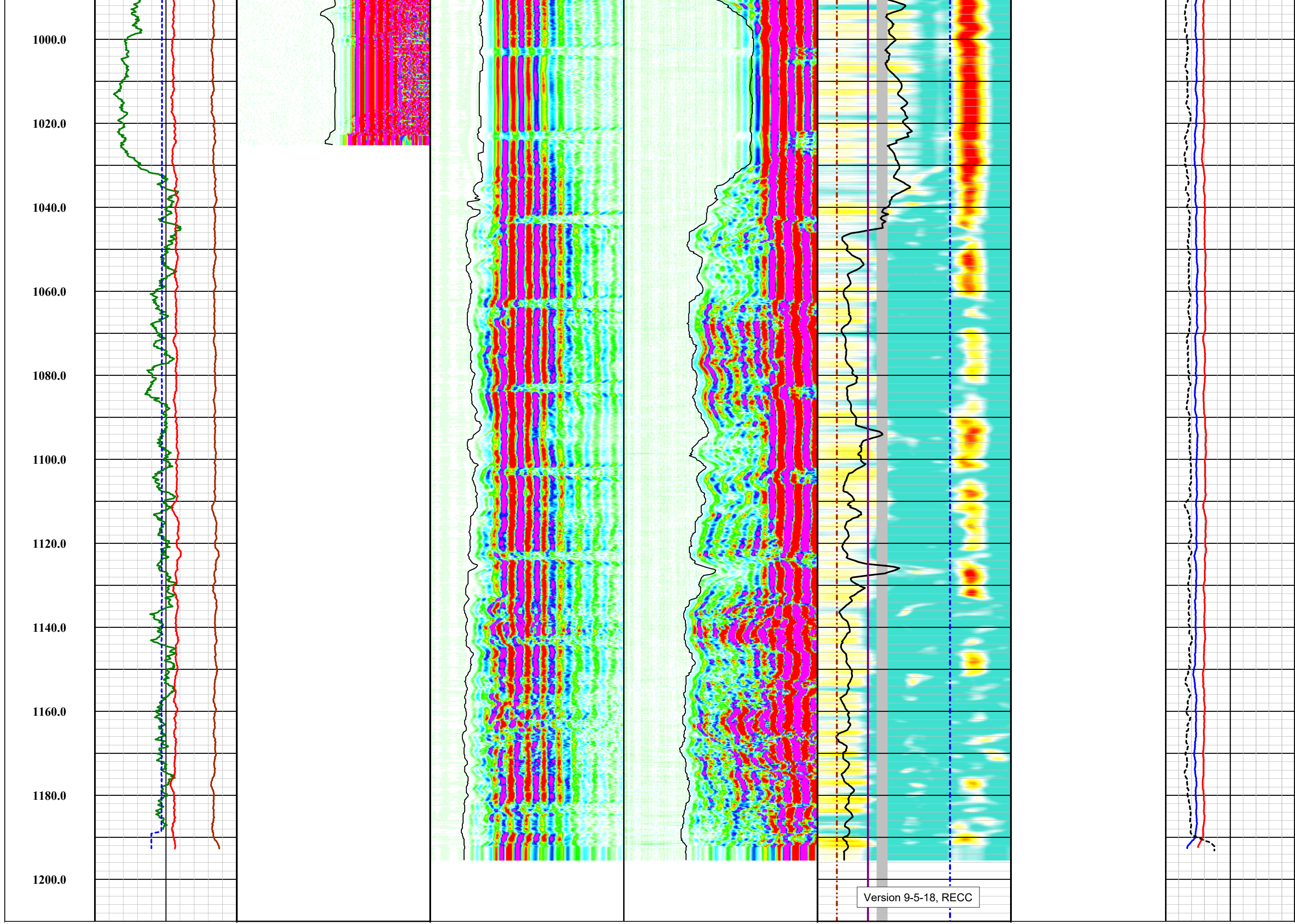












[illegible]

APPENDIX G

SAPT Documentation

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
STANDARD ANNULAR PRESSURE TEST

Operator FLORENCE COPPER, INC

State Permit No. P-101704

Address 1575 W. HUNT HWY

USEPA Permit No. R9UIC-AZ3-FY11-1

FLORENCE, AZ 85132

Date of Test 4/11/2018

Well Name R-02

Well Type ENV - RECOVERY - Class III

LOCATION INFORMATION SW Quarter of the NE Quarter of the SW Quarter

of Section 28 ; Range 9E ; Township 4S ; County PINAL ;

Company Representative IAN REAM ; Field Inspector LAUREN CANDREVA ;

Type of Pressure Gauge Pressure transducer with data logger inch face; 300 psi full scale; 0.001 psi increments;

New Gauge? Yes ☒ No ☐ If no, date of calibration Calibration certification submitted? Yes ☐ No ☒

TEST RESULTS

Readings must be taken at least every 10 minutes for a minimum of 30 minutes for Class II, III and V wells and 60 minutes for Class I wells.

For Class II wells, annulus pressure should be at least 300 psig. For Class I wells, annulus pressure should be the greater of 300 psig or 100 psi above maximum permitted injection pressure.

Original chart recordings must be submitted with this form.

5-year or annual test on time? Yes ☐ No ☒

2-year test for TA'd wells on time? Yes ☐ No ☒

After rework? Yes ☐ No ☒

Newly permitted well? Yes ☒ No ☐

| Time | Pressure (in psig) | |
|-------|--------------------|--------|
| | Annulus | Tubing |
| 18:35 | 171.77 | same |
| 18:45 | 171.65 | same |
| 18:55 | 171.67 | same |
| 19:05 | 171.72 | same |
| | | |
| | | |
| | | |
| | | |

Casing size 5" - NOMINAL

Tubing size 2"

Packer type INFLATABLE PACKER

Packer set @ 6.68(top), 506.01(bottom)

Top of Permitted Injection Zone 440

Is packer 100 ft or less above top of

Injection Zone ? Yes ☒ No ☐

If not, please submit a justification.

Fluid return (gal.) 0.41

Comments: Three tests were conducted to confirm results, data for all tests is included in attached chart and table

Test Pressures: Max. Allowable Pressure Change: Initial test pressure x 0.05 8.59 psi
Test Period Pressure change 0.05 psi

Test Passed ☒ Test Failed ☐

If failed test, well must be shut in, no injection can occur, and USEPA must be contacted within 24 hours. Corrective action needs to occur, the well retested, and written authorization received before injection can recommence.

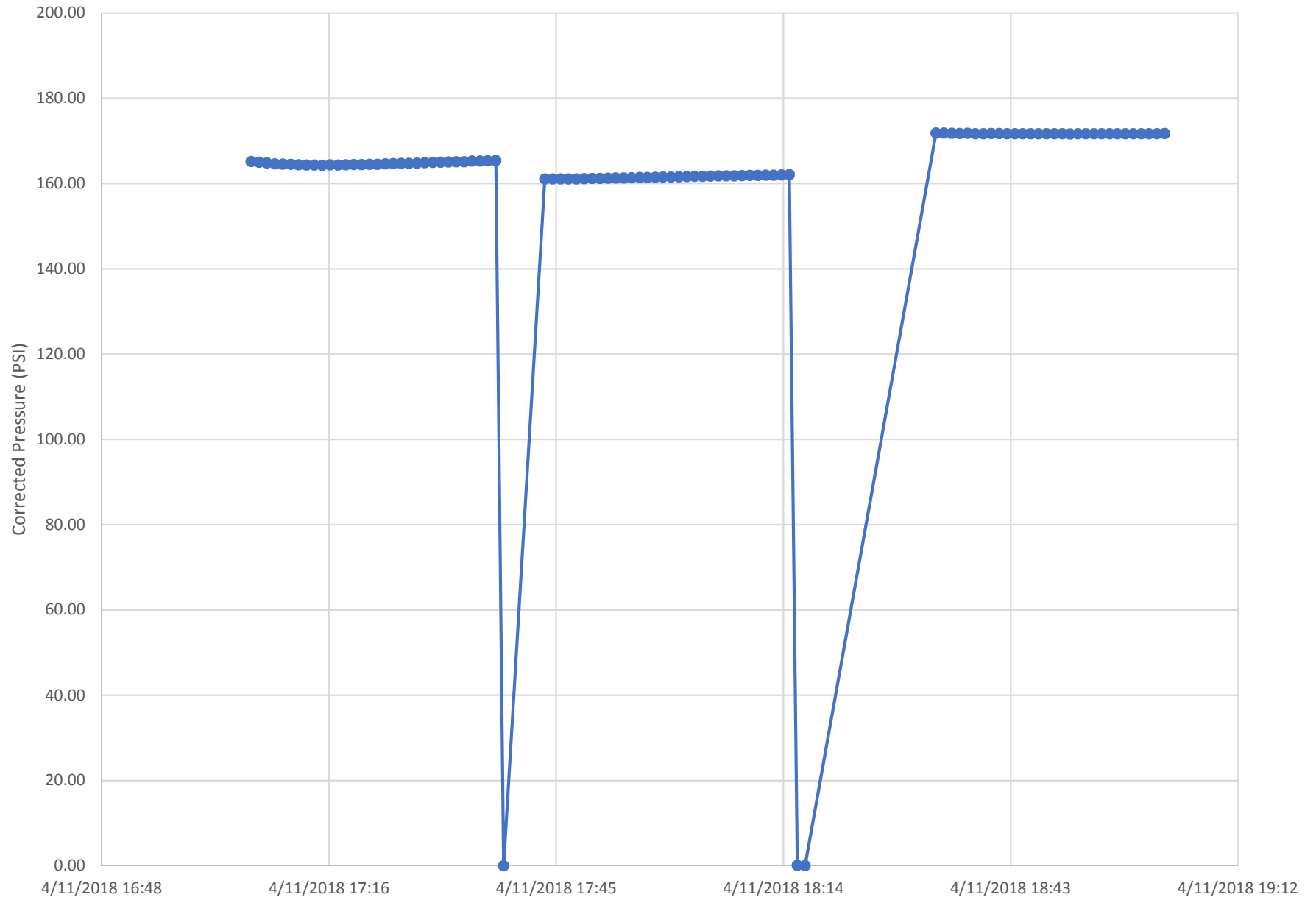
I certify under penalty of law that this document and all attachments are, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (See 40 CFR 144.32(d))

Ian Ream
Printed Name of Company Representative

[Signature]
Signature of Company Representative

9-14-2018
Date

R-02 Standard Annular Pressure Test Data



| Well R-02 SAPT Data | | |
|----------------------------|------------------------------------|--|
| Tranducer Serial Number: | 554227 | |
| Tranducer Model: | Level TROLL 400 non-vented 300 psi | |
| Date and Time | Pressure (PSI) | Corrected Presssure (PSI) (Sensor pressure - barometric pressure) |
| 4/11/2018 17:06 | 179.065 | 165.16 |
| 4/11/2018 17:07 | 178.911 | 165.00 |
| 4/11/2018 17:08 | 178.72 | 164.81 |
| 4/11/2018 17:09 | 178.525 | 164.62 |
| 4/11/2018 17:10 | 178.448 | 164.54 |
| 4/11/2018 17:11 | 178.39 | 164.48 |
| 4/11/2018 17:12 | 178.292 | 164.38 |
| 4/11/2018 17:13 | 178.239 | 164.33 |
| 4/11/2018 17:14 | 178.248 | 164.34 |
| 4/11/2018 17:15 | 178.202 | 164.29 |
| 4/11/2018 17:16 | 178.268 | 164.36 |
| 4/11/2018 17:17 | 178.229 | 164.32 |
| 4/11/2018 17:18 | 178.269 | 164.36 |
| 4/11/2018 17:19 | 178.33 | 164.42 |
| 4/11/2018 17:20 | 178.333 | 164.42 |
| 4/11/2018 17:21 | 178.41 | 164.50 |
| 4/11/2018 17:22 | 178.411 | 164.50 |
| 4/11/2018 17:23 | 178.498 | 164.59 |
| 4/11/2018 17:24 | 178.548 | 164.64 |
| 4/11/2018 17:25 | 178.608 | 164.70 |
| 4/11/2018 17:26 | 178.645 | 164.74 |
| 4/11/2018 17:27 | 178.706 | 164.80 |
| 4/11/2018 17:28 | 178.777 | 164.87 |
| 4/11/2018 17:29 | 178.826 | 164.92 |
| 4/11/2018 17:30 | 178.883 | 164.97 |
| 4/11/2018 17:31 | 178.943 | 165.03 |
| 4/11/2018 17:32 | 179.023 | 165.11 |
| 4/11/2018 17:33 | 179.039 | 165.13 |
| 4/11/2018 17:34 | 179.156 | 165.25 |
| 4/11/2018 17:35 | 179.152 | 165.24 |
| 4/11/2018 17:36 | 179.253 | 165.34 |
| 4/11/2018 17:37 | 179.306 | 165.40 |
| 4/11/2018 17:38 | 13.91 | 0.00 |
| 4/11/2018 17:44 | 174.973 | 161.06 |
| 4/11/2018 17:45 | 174.963 | 161.05 |
| 4/11/2018 17:46 | 174.98 | 161.07 |
| 4/11/2018 17:47 | 174.973 | 161.06 |
| 4/11/2018 17:48 | 175.007 | 161.10 |
| 4/11/2018 17:49 | 175.052 | 161.14 |
| 4/11/2018 17:50 | 175.078 | 161.17 |

| Well R-02 SAPT Data | | |
|----------------------------|------------------------------------|--|
| Tranducer Serial Number: | 554227 | |
| Tranducer Model: | Level TROLL 400 non-vented 300 psi | |
| Date and Time | Pressure (PSI) | Corrected Presssure (PSI) (Sensor pressure - barometric pressure) |
| 4/11/2018 17:51 | 175.076 | 161.17 |
| 4/11/2018 17:52 | 175.173 | 161.26 |
| 4/11/2018 17:53 | 175.225 | 161.32 |
| 4/11/2018 17:54 | 175.226 | 161.32 |
| 4/11/2018 17:55 | 175.266 | 161.36 |
| 4/11/2018 17:56 | 175.31 | 161.40 |
| 4/11/2018 17:57 | 175.34 | 161.43 |
| 4/11/2018 17:58 | 175.35 | 161.44 |
| 4/11/2018 17:59 | 175.407 | 161.50 |
| 4/11/2018 18:00 | 175.447 | 161.54 |
| 4/11/2018 18:01 | 175.502 | 161.59 |
| 4/11/2018 18:02 | 175.535 | 161.63 |
| 4/11/2018 18:03 | 175.604 | 161.69 |
| 4/11/2018 18:04 | 175.587 | 161.68 |
| 4/11/2018 18:05 | 175.624 | 161.71 |
| 4/11/2018 18:06 | 175.684 | 161.77 |
| 4/11/2018 18:07 | 175.701 | 161.79 |
| 4/11/2018 18:08 | 175.707 | 161.80 |
| 4/11/2018 18:09 | 175.774 | 161.86 |
| 4/11/2018 18:10 | 175.798 | 161.89 |
| 4/11/2018 18:11 | 175.827 | 161.92 |
| 4/11/2018 18:12 | 175.864 | 161.95 |
| 4/11/2018 18:13 | 175.864 | 161.95 |
| 4/11/2018 18:14 | 175.94 | 162.03 |
| 4/11/2018 18:15 | 175.963 | 162.05 |
| 4/11/2018 18:16 | 14.027 | 0.12 |
| 4/11/2018 18:17 | 13.931 | 0.02 |
| 4/11/2018 18:33 | 185.757 | 171.85 |
| 4/11/2018 18:34 | 185.744 | 171.83 |
| 4/11/2018 18:35 | 185.684 | 171.77 |
| 4/11/2018 18:36 | 185.645 | 171.74 |
| 4/11/2018 18:37 | 185.676 | 171.77 |
| 4/11/2018 18:38 | 185.583 | 171.67 |
| 4/11/2018 18:39 | 185.61 | 171.70 |
| 4/11/2018 18:40 | 185.621 | 171.71 |
| 4/11/2018 18:41 | 185.613 | 171.70 |
| 4/11/2018 18:42 | 185.597 | 171.69 |
| 4/11/2018 18:43 | 185.563 | 171.65 |
| 4/11/2018 18:44 | 185.586 | 171.68 |
| 4/11/2018 18:45 | 185.564 | 171.65 |

| Well R-02 SAPT Data | | |
|----------------------------|------------------------------------|--|
| Tranducer Serial Number: | 554227 | |
| Tranducer Model: | Level TROLL 400 non-vented 300 psi | |
| Date and Time | Pressure (PSI) | Corrected Presssure (PSI) (Sensor pressure - barometric pressure) |
| 4/11/2018 18:46 | 185.575 | 171.67 |
| 4/11/2018 18:47 | 185.582 | 171.67 |
| 4/11/2018 18:48 | 185.587 | 171.68 |
| 4/11/2018 18:49 | 185.573 | 171.66 |
| 4/11/2018 18:50 | 185.531 | 171.62 |
| 4/11/2018 18:51 | 185.588 | 171.68 |
| 4/11/2018 18:52 | 185.568 | 171.66 |
| 4/11/2018 18:53 | 185.595 | 171.69 |
| 4/11/2018 18:54 | 185.589 | 171.68 |
| 4/11/2018 18:55 | 185.577 | 171.67 |
| 4/11/2018 18:56 | 185.611 | 171.70 |
| 4/11/2018 18:57 | 185.582 | 171.67 |
| 4/11/2018 18:58 | 185.602 | 171.69 |
| 4/11/2018 18:59 | 185.611 | 171.70 |
| 4/11/2018 19:00 | 185.61 | 171.70 |
| 4/11/2018 19:01 | 185.605 | 171.70 |
| 4/11/2018 19:02 | 185.639 | 171.73 |
| 4/11/2018 19:03 | 185.612 | 171.70 |
| 4/11/2018 19:04 | 185.616 | 171.71 |
| 4/11/2018 19:05 | 185.633 | 171.72 |

APPENDIX H

Well Development Field Forms

DEVELOPMENT FIELD DATA LOG

| | |
|--|---|
| Project Name: <u>FLORENCE CASPARY</u> | Project No.: <u>129687-007</u> |
| Well No.: <u>R-02</u> | Date: <u>3-23-18</u> |
| Location: <u>Florence, AZ</u> | Measuring Point: <u>Discharge hose</u> |
| Total Depth of Well (ft bls): <u>1700</u> | Screen Interval (ft bls): <u>520-1200</u> |
| Pump Type/Setting (ft bls): <u>6000FOS 406</u> | Activity: <u>Aer lift development</u> |
| How Q Measured: | H&A Personnel: <u>C. H. H. H.</u> |

| Time | Discharge (gpm) | Pumping Water Level (ft) | Specific Capacity (gpm/ft) | Sand Content (ppm) | pH | Sp. Cond. (µmhos/cm) | Temp. °C | Turbidity NTU | Comments |
|---------------------------|-----------------|--------------------------|----------------------------|--------------------|------|----------------------|----------|---------------|-------------------|
| 0907 | Start | air lift | | | | | | | |
| 0909 | ~0.8 | 406 422 | - | 0.5+ | 8.03 | 4027 | 24.01 | - | Black. |
| 0915 | 0.8 | 406 | - | <0.1 | 8.22 | 4123 | 24.12 | - | SAA. |
| 0930 | 0.8 | 406 | - | 0.0 | 8.38 | 4216 | 25.01 | - | SAA. |
| 0945 | 0.8 | 406 | - | 0.0 | 8.49 | 4251 | 25.25 | - | SAA. |
| 1000 | <0.8 | 406 | - | 0.0 | 8.52 | 4272 | 25.20 | - | SAA. |
| 1015 | 0.5 | 406 | - | 0.0 | 8.56 | 4263 | 26.21 | - | SAA. |
| 1030 | 0.5 | 406 | - | 0.0 | 8.59 | 4245 | 25.18 | - | SAA. |
| 1045 | 0.5 | 406 | - | 0.0 | 8.59 | 4304 | 25.61 | - | SAA. |
| 1100 | 0.5 | 406 | - | 0.0 | 8.62 | 4322 | 26.24 | - | SAA. |
| 1115 | 0.5 | 406 | - | 0.0 | 8.63 | 4338 | 26.51 | - | SAA. |
| 1130 | 0.8 | 406 | - | 0.0 | 8.46 | 4030 | 24.43 | - | SAA. |
| Stop airlift, let recover | | | | | | | | | |
| 1139 | Start | air lift | | | | | | | |
| 1140 | ~1.6 | 406 422 | - | 0.0 | 8.36 | 4055 | 25.54 | - | Black. |
| 1155 | ~0.8 | 406 | - | 0.0 | 8.39 | 4014 | 25.70 | - | Black. |
| 1210 | ~0.8 | 406 | - | 0 | 8.55 | 3938 | 24.41 | - | Black. |
| 1225 | ~0.7 | 406 | - | 0 | 8.47 | 3904 | 24.97 | - | Black. |
| 1240 | ~0.5 | 406 | - | 0 | 8.55 | 3736 | 24.06 | - | Black. |
| 1255 | ~0.5 | 406 | - | 0 | 8.58 | 3686 | 23.30 | - | Black/v. dk. grey |
| Stop airlift to recover | | | | | | | | | |
| 1329 | Start | air lift | | | | | | | |
| 1330 | ~1.6 | 406 422 | - | 0 | 8.39 | 3471 | 22.07 | - | Black. |
| 1345 | ~0.8 | 406 422 | - | 0 | 8.53 | 3545 | 21.99 | - | Black/v. dk. grey |
| ~1355 | Stop | air lift | | | | | | | |
| 1451 | Start | air lift 616 | | | | | | | |
| 1453 | ~1.6 | 616 | - | ~0.3 | 8.26 | 3268 | 21.73 | - | Dark grey/Black |
| 1500 | ~1.0 | 616 | - | <0.1 | 8.27 | 3311 | 21.62 | - | SAA. |
| Comments: | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

DEVELOPMENT FIELD DATA LOG

| | |
|--|--|
| Project Name: <u>FCI</u> | Project No.: <u>179687 179687</u> |
| Well No.: <u>R-02</u> | Date: <u>3-24-18</u> |
| Location: <u>FLORENCE, AZ</u> | Measuring Point: <u>Discharge Hole</u> |
| Total Depth of Well (ft bls): <u>1200</u> | Screen Interval (ft bls): <u>500-1200</u> |
| Pump Type/Setting (ft bls): <u>Various</u> | Activity: <u>Air Lift</u> |
| How Q Measured: <u>Level Stone with</u> | H&A Personnel: <u>Kford, S Hensel</u> |

| Time | Discharge (gpm) | Pumping Water Level (ft) | Specific Capacity (gpm/ft) | Sand Content (ppm) | pH | Sp. Cond. (umhos/cm) | Temp. °C | Turbidity NTU | Comments |
|-----------|------------------|--------------------------|----------------------------|--------------------|------|----------------------|----------|---------------|-----------------------------|
| 1515 | ~0.9 | 616 | - | 0 | 8.43 | 3601 | 23.11 | - | Dark Gray / Black |
| 1530 | ~0.9 | 616 | - | 0 | 8.49 | 3782 | 23.34 | - | SAA. |
| 1545 | ~0.9 | 616 | - | 0 | 8.50 | 3839 | 23.51 | - | SAA |
| 1600 | ~0.8 | 616 | - | 0 | 8.47 | 3749 | 23.18 | - | SAA. |
| 1615 | ~1.3 | 616 | - | 0 | 8.56 | 3688 | 22.47 | - | SAA |
| 1630 | ~1.1 | 616 | - | 0 | 8.56 | 3617 | 21.92 | - | SAA. |
| 1652 | - STOP AIRLIFT | | | | | | | | |
| 1732 | - Start Air Lift | | | | | | | | |
| 1734 | ~2 | 817 | - | ~0.3 | 8.27 | 3339 | 21.52 | - | Black. |
| 1750 | ~2 | 817 | - | <0.1 | 8.39 | 3359 | 21.05 | - | Black. |
| 1805 | ~2 | 817 | - | 0 | 8.44 | 3357 | 20.95 | 200 | SAA. |
| 1900 | ~2 | 817 | - | 0 | 8.43 | 3006 | 19.15 | 91.4 | Black |
| 2000 | ~2 | 817 | - | 0 | 8.38 | 2752 | 20.68 | 73.2 | Dark grey |
| 2100 | ~2 | 817 | - | 0 | 8.34 | 2602 | 21.16 | 45.1 | Grey |
| 2200 | ~2 | 817 | - | 0 | 8.35 | 2467 | 21.07 | 32.3 | grey |
| 2300 | ~2 | 817 | - | 0 | 8.30 | 2353 | 20.56 | 37.3 | grey |
| 0000 | ~2 | 817 | - | 0 | 8.28 | 2284 | 21.59 | 19.4 | cloudy |
| 0100 | ~2 | 817 | - | 0 | 8.26 | 2211 | 21.06 | 18.7 | cloudy |
| 0200 | ~2 | 817 | - | 0 | 8.27 | 2159 | 20.76 | 11.8 | cloudy as first, then clear |
| 0300 | ~2 | 817 | - | 0 | 8.25 | 2146 | 21.31 | 10.7 | clear, frothy |
| 0400 | ~2 | 817 | - | 0 | 8.26 | 2120 | 21.40 | 8.10 | clear, frothy |
| 0500 | ~2 | 817 | - | 0 | 8.26 | 2103 | 21.52 | 8.16 | clear, frothy |
| 0605 | ~4 | 817 | - | 0 | 8.26 | 2040 | 21.30 | 6.86 | clear, frothy |
| 0630 | ~4 | 817 | - | 0 | 8.14 | 2067 | 21.05 | 5.90 | SAA |
| 0645 | ~4 | 817 | - | 0 | 8.14 | 2861 | 21.26 | 5.72 | SAA |
| 0700 | ~4 | 817 | - | 0 | 8.16 | 2929 | 22.02 | 4.62 | SAA. |
| 0702 | - STOP AIRLIFT | | | | | | | | |
| 0807 | - Start Air Lift | | | | | | | | |
| Comments: | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

DEVELOPMENT FIELD DATA LOG

| | |
|--|---|
| Project Name: <u>FCI PTF</u> | Project No.: <u>129687</u> |
| Well No.: <u>R-02</u> | Date: <u>3-25-18</u> |
| Location: <u>Florence, AZ</u> | Measuring Point: <u>Discharge hose</u> |
| Total Depth of Well (ft bls): <u>1200</u> | Screen Interval (ft bls): <u>500-1200</u> |
| Pump Type/Setting (ft bls): <u>Various</u> | Activity: <u>Air Lift</u> |
| How Q Measured: <u>Canal stopwater</u> | H&A Personnel: <u>Kford</u> |

| Time | Discharge (gpm) | Pumping Water Level (ft) | Specific Capacity (gpm/ft) | Sand Content (ppm) | pH | Sp. Cond. (µmhos/cm) | Temp. °C | Turbidity NTU | Comments |
|----------------|-----------------|--------------------------|----------------------------|--------------------|------|----------------------|----------|---------------|---------------------------------|
| 0809 | ~2 | 1004 | - | ~0.4 | 7.98 | 3100 | 20.76 | 586 | Cloudy, lt. grey-brown |
| 0824 | ~1.6 | 1004 | - | 0.5 | 8.47 | 5252 | 22.23 | 347 | Black. |
| 0840 | ~2-2.5 | 1004 | - | 0.1 | 8.29 | 3330 | 22.90 | 36.9 | lt grey, cloudy; black "scales" |
| 0857 | ~2-2.5 | 1004 | - | <0.1 | 8.23 | 3077 | 23.37 | 26.0 | lt. grey, sl. cloudy |
| 0912 | ~2.5 | 1004 | - | <0.1 | 8.26 | 3112 | 23.78 | 16.4 | lt grey, clear |
| 0927 | ~2.5 | 1004 | - | 0 | 8.23 | 3116 | 23.73 | 10.2 | clear |
| 0945 | ~2.5 | 1004 | - | 0 | 8.26 | 3093 | 23.86 | 10.5 | clear |
| ~0950 | | | | | | | | | Stop air lift |
| 1100 | | 1134 | | | | | | | Start air lift |
| 1103 | ~2 | 1034 | - | ~0.3 | 8.01 | 3092 | 24.41 | 234 | Cloudy, lt. grey-brown |
| 1110 | ~2.5 | 1034 | - | <0.1 | 8.16 | 3107 | 23.74 | 79.2 | lt. grey, cloudy |
| 1112 | | | | | | | | | Surge a few times |
| ~1116 | | 1134 | | | | | | | Start air lift |
| 1117 | ~2 | 1034 | - | - | - | - | - | - | Black, thick |
| 1123 | ~0.5 | 1034 | - | ~0.1 | - | - | - | over | Black, "Frothy" |
| 1130 | ~0.8 | 1034 | - | ~0.1 | - | - | - | - | SAA. |
| 1145 | ~0.8 | 1034 | - | - | - | - | - | - | SAA. |
| 1200 | ~0.8 | 1034 | - | - | - | - | - | - | SAA. |
| 1215 | ~2.5 | 1034 | - | <0.1 | 8.20 | 3159 | 23.83 | 51.4 | Grey, sl. cloudy |
| 1230 | ~4 | 1034 | - | 0 | 8.22 | 3065 | 24.29 | 34.1 | lt. grey, sl. cloudy |
| 1245 | ~4 | 1034 | - | 0 | 8.23 | 3069 | 24.67 | 17.6 | V. lt grey, v. sl. cloudy |
| 1300 | ~4 | 1034 | - | 0 | 8.20 | 3106 | 24.32 | 7.50 | clear |
| 1315 | ~4 | 1034 | - | 0 | 8.21 | 3081 | 24.41 | 6.00 | clear |
| 1330 | ~4 | 1034 | - | 0 | 8.23 | 3073 | 24.47 | 7.04 | clear |
| 1400 | ~4 | 1034 | - | 0 | 8.21 | 3093 | 24.35 | 3.96 | clear |
| 1430 | ~4 | 1034 | - | 0 | 8.25 | 3056 | 24.21 | 3.90 | clear |
| 1500 | ~4 | 1034 | - | 0 | 8.26 | 3074 | 24.23 | 5.64 | clear |
| 1530 | ~4 | 1034 | - | 0 | 8.27 | 3055 | 24.00 | 4.76 | clear |
| Comments: 1134 | | | | | | | | | |
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DEVELOPMENT FIELD DATA LOG

| | |
|---|---|
| Project Name: <u>FLI PTF</u> | Project No.: <u>129687</u> |
| Well No.: <u>R-02</u> | Date: <u>3-25-18</u> |
| Location: <u>Florence, AZ</u> | Measuring Point: <u>Discharge hole</u> |
| Total Depth of Well (ft bls): <u>1200</u> | Screen Interval (ft bls): <u>500-1200</u> |
| Pump Type/Setting (ft bls): <u>Variable</u> | Activity: <u>QA/QC</u> |
| How Q Measured: <u>cone, stopwatch</u> | H&A Personnel: <u>KE</u> |

| Time | Discharge (gpm) | Pumping Water Level (ft) | Specific Capacity (gpm/ft) | Sand Content (ppm) | pH | Sp. Cond. (µmhos/cm) | Temp. °C | Turbidity NTU | Comments |
|-----------|-----------------|--------------------------|----------------------------|--------------------|-------------|----------------------|----------|---------------|----------------------|
| 1600 | ~4 | 1133 1134 | - | 0 | 8.26 | 3045 | 23.82 | 3.76 | clear |
| 1630 | ~4 | 1134 | - | 0 | 8.25 | 3060 | 23.45 | 2.39 | clear |
| 1700 | ~4 | 1134 | - | 0 | 8.25 | 3040 | 23.13 | 5.47 | clear |
| 1701 | | | | | | | | | Stop air-lifting |
| 0510 | ~5 | 1165 | - | - | APR LIFT ON | | | | |
| 0515 | ~5 | 1165 | - | 0.1 | 8.04 | 2755 | 19.99 | 6.35 | clear / yellow tint |
| 0520 | ~5 | 1165 | - | | | | | | black / sandy |
| 0905 | ~5 | 1168.7 | - | 8 | 8.11 | 2912 | 22.97 | 5.34 | MURKY / GRAY |
| 0950 | ~5 | 1107 | - | 0.1 | 8.22 | 2935 | 23.64 | 13.8 | clear |
| 1020 | ~5 | 1107 | - | 0.1 | 8.08 | 2954 | 23.80 | 15.4 | clear |
| 1035 | - | APR LIFT OFF | TO 100 | JOINT | | | | | |
| 1100 | - | 1168 | - | - | APR LIFT ON | | | | |
| 1110 | ~7 | 1168 | - | 15 | 8.20 | 2934 | 23.40 | ON | GRAY / MURKY |
| 1145 | ~7 | 1173 | - | 10.0 | 8.22 | 2943 | 23.75 | ON | GRAY / MURKY / SANDY |
| 1230 | - | EMULSION PIPE PLUGGED | | | UP | | | | |
| 0710 | | | | | | | | | air up |
| 0712 | ~7 | 1170 | | <0.1 | 8.17 | 3138 | 17.79 | 17.9 | light gray |
| 0823 | ~7 | 1175 | | 0.5 | 8.22 | 3153 | 22.08 | 22.4 | clear, sand & gravel |
| 0913 | ~7 | 1175 | | 1.0 | 8.21 | 3079 | 22.10 | 50.6 | light gray |
| 1333 | ~7 | 1189 | | 0.4 | 8.19 | 3057 | 24.59 | 28.1 | sl. cloudy |
| 1438 | ~7 | 1195 | | 0.9 | 8.20 | 3062 | 24.39 | 49.5 | cloudy |
| 1512 | ~7 | 1197 | | 0.7 | 8.16 | 3026 | 24.23 | 61.1 | cloudy |
| 1530 | ~7 | 1197 | | 1.0 | 8.17 | 3029 | 24.34 | 72.1 | sl. cloudy |
| 1735 | ~7 | 1199 | | <0.1 | 8.12 | 3028 | 23.03 | 10.3 | clear |
| Comments: | | | | | | | | | |
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DEVELOPMENT FIELD DATA LOG

| | |
|---------------------------------------|---------------------------------|
| Project Name: <u>FL1</u> | Project No.: _____ |
| Well No.: <u>R-02</u> | Date: <u>3/29/18</u> |
| Location: _____ | Measuring Point: _____ |
| Total Depth of Well (ft bls): _____ | Screen Interval (ft bls): _____ |
| Pump Type/Setting (ft bls): _____ | Activity: <u>lift</u> |
| How Q Measured: <u>cone stopwatch</u> | H&A Personnel: <u>P. Kroger</u> |

| Time | Discharge (gpm) | Pumping Water Level (ft) | Specific Capacity (gpm/ft) | Sand Content (ppm) | pH | Sp. Cond. (µmhos/cm) | Temp. °C | Turbidity NTU | Comments |
|-----------|-----------------|--------------------------|----------------------------|--------------------|------|----------------------|----------|---------------|------------------|
| 0725 | start | | | | | | | | |
| 0747 | ~3 | 422 | | 0 | 7.93 | 4655 | 18.5 | OK | 0mg/L chlorine |
| 0802 | ~4 | | | 0 | 8.16 | 4435 | 19.2 | 369 | |
| 0822 | ~4 | | | 0 | 8.20 | 4381 | 19.6 | 261 | |
| 0925 | start | 616 | | | 7.97 | 7464 | 22.3 | | |
| 0952 | ~12 | | | 0.5 | 7.97 | 7464 | 22.3 | 201 | 0mg/L chlorine |
| 1007 | ~10 | | | 0 | 7.97 | 8103 | 22.3 | OR | |
| 1026 | ~11 | | | 0 | 7.98 | 9420 | 22.6 | OR | |
| 1140 | start | 310 | | | | | | | |
| 1150 | ~10 | | | 4 | 8.17 | 19376 | 23.2 | OK | 30mg/L chlorine |
| 1204 | ~10 | | | 2 | 8.13 | 14789 | 23.8 | OR | 75mg/L chlorine |
| 1218 | ~12 | | | 0 | 8.15 | 11179 | 23.8 | OR | 75mg/L chlorine |
| 1230 | ~10 | | | 0 | 8.19 | 10081 | 23.8 | 923 | 100mg/L chlorine |
| 1246 | ~8 | | | 0 | 8.14 | 10174 | 24.0 | 761 | 25mg/L chlorine |
| 1345 | start | 1004 | | | | | | | |
| 1348 | ~8 | | | 0 | 8.13 | 10508 | 24.1 | OR | 60mg/L chlorine |
| 1405 | ~8 | | | 0.5 | 8.44 | 24386 | 24.2 | OR | 10mg/L chlorine |
| 1420 | ~8 | | | | 7.96 | 8602 | 24.3 | 159 | 20mg/L chlorine |
| 1440 | stop | | | | | | | | |
| 1540 | start | 1199 | | | | | | | |
| 1630 | | | | | | | | | |
| 1646 | ~8 | | | 15 | 8.01 | 15054 | 21.7 | OR | 10mg/L chlorine |
| 1700 | ~8 | | | 2 | 7.95 | 9336 | 21.7 | OR | 50mg/L chlorine |
| 1720 | ~8 | | | 1 | 7.97 | 9020 | 21.8 | OR | 50mg/L chlorine |
| 1740 | ~8 | | | 0.5 | 8.00 | 7964 | 21.8 | 872 | 75mg/L chlorine |
| 1756 | ~8 | | | | 8.00 | 7189 | 21.8 | 348 | 65mg/L chlorine |
| 1820 | ~8 | | | 1 | 8.01 | 6264 | 22.3 | 242 | 50mg/L chlorine |
| Comments: | | | | | | | | | |
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DEVELOPMENT FIELD DATA LOG

| | |
|---|--------------------------------|
| Project Name: <u>ECI</u> | Project No.: <u>129687-001</u> |
| Well No.: <u>R-02</u> | Date: <u>3/29/18</u> |
| Location: <u>Florence, AL</u> | Measuring Point: |
| Total Depth of Well (ft bls): | Screen Interval (ft bls): |
| Pump Type/Setting (ft bls): | Activity: <u>Air Lift</u> |
| How Q Measured: <u>Core + Stopwatch</u> | H&A Personnel: <u>GF, PK</u> |

| Time | Discharge (gpm) | Pumping Water Level (ft) | Specific Capacity (gpm/ft) | Sand Content (ppm) | pH | Sp. Cond. (µmhos/cm) | Temp. °C | Turbidity NTU | Comments |
|------|---------------------------------------|--------------------------------|----------------------------------|--------------------------|------|-------------------------|-------------|------------------|------------------|
| 1845 | 77 | - | - | 0.5 | 8.01 | 5823 | 22.09 | 124 | 30 ppm chlorine |
| 1920 | 8 | - | - | 0.5 | 8.01 | 5467 | 22.13 | 54 | 50 ppm chlorine |
| 2000 | ~8 | - | - | 0.5 | 8.2 | 5246 | 22.6 | 34.7 | 50 ppm chlorine |
| 2100 | ~8 | - | - | 0.2 | 8.01 | 4895 | 21.5 | 48.3 | 50 ppm chlorine |
| 2200 | 8 | - | - | 0 | 8.05 | 4762 | 21.0 | 52 | 50 ppm chlorine |
| 2300 | 8 | - | - | 0 | 8.06 | 4293 | 20.9 | 26.9 | 50 ppm chlorine |
| 0225 | ~8 | - | - | 0 | 7.98 | 4827 | 21.1 | 115 | 5 mg/L chlorine |
| 0240 | ~8 | - | - | 1 | 8.05 | 5925 | 22.5 | 94.0 | 5 mg/L chlorine |
| 0300 | ~8 | - | - | 3 | 7.99 | 5421 | 23.3 | 95.7 | 25 mg/L chlorine |
| 0328 | ~8 | - | - | 1 | 8.04 | 4596 | 23.6 | 26.9 | 10 mg/L chlorine |
| 0352 | ~8 | - | - | 1 | 8.04 | 4438 | 23.8 | 23.3 | 10 mg/L chlorine |
| 0410 | ~8 | - | - | 0.5 | 8.04 | 4310 | 24.2 | 14.3 | 10 mg/L chlorine |
| 0444 | ~8 | - | - | 0.1 | 8.00 | 4273 | 24.1 | 19.0 | 10 mg/L chlorine |
| 1005 | ~8 | - | - | 0 | 8.04 | 2534 | 24.2 | 13.6 | 5 mg/L chlorine |
| 1025 | stop discharging sand, pull discharge | | | | | | | | |

Comments:

SHUT DOWN AIRLIFT @ 2300 - NO LONGER PRODUCING SAND

DEVELOPMENT FIELD DATA LOG

| | |
|---|-----------------------------------|
| Project Name: <u>FC1</u> | Project No.: |
| Well No.: <u>R-02</u> | Date: <u>4/2/18</u> |
| Location: | Measuring Point: |
| Total Depth of Well (ft bls): | Screen Interval (ft bls): |
| Pump Type/Setting (ft bls): <u>1160</u> | Activity: <u>WELL DEVELOPMENT</u> |
| How Q Measured: <u>Flow Meter + Stopwatch</u> | H&A Personnel: <u>G. FOUSHEE</u> |

| Time | Discharge (gpm) | Pumping Water Level (ft) | Specific Capacity (gpm/ft) | Sand Content (ppm) | pH | Sp. Cond. (umhos/cm) | Temp. °C | Turbidity NTU | Comments |
|-----------|-----------------|--------------------------|----------------------------|--------------------|------|----------------------|----------|---------------|------------------------|
| 1800 | | | | | | | | | 866400 |
| 1927 | | | | | | | | 134 | 866540 - METEN STOPPED |
| | | | | | | | | 3 | 15154020 NEW METEN |
| 2100 | .60 | | | 0 | 7.60 | 2008 | 24.38 | 37.7 | 1554700 |
| 2150 | .60 | | | 0 | | | | | 1557 |
| 2150 | .60 | 263.8 | | 0 | 7.46 | 1836 | 24.08 | 22.4 | 1558130 |
| 2133 | .60 | | | 0 | 7.43 | 1802 | 24.01 | 6.66 | 1560230 |
| 2140 | .60 | | | 0 | 7.51 | 1793 | 24.18 | 3.29 | 1560710 |
| 2315 | .60 | 259.2 | | 0 | 7.35 | 1772 | 23.46 | 3.20 | 1561740 |
| 2340 | .60 | 262.5 | | 0 | 7.42 | 1740 | 23.53 | 11.1 | 1562300 |
| 2343 | .60 | 262.6 | | 0 | 7.43 | 1743 | 23.50 | 6.50 | 1562700 |
| 0040 | .60 | 269.2 | | 0 | 7.32 | 1768 | 23.82 | 2.51 | 1563830 |
| 0145 | .60 | 264.1 | | 0 | 7.31 | 1753 | 24.00 | 2.89 | 1565900 |
| 0315 | .60 | 257.5 | | 0 | 7.29 | 1709 | 21.58 | 191 | 1566240 @ 887' BLS |
| 0334 | .60 | 259.2 | | 0 | 7.60 | 1740 | 23.91 | 4.3 | 1567300 |
| 0352 | .60 | 259.7 | | 0 | 7.56 | 1749 | 24.18 | 11.1 | 1568300 |
| 0409 | .60 | 260.5 | | 0 | 7.56 | 1749 | 24.18 | 9.13 | 1569030 |
| 0430 | .60 | 260.9 | | 0 | 7.56 | 1715 | 22.88 | 5.03 | 1570400 5429m Accum |
| 0501 | .60 | 260.9 | | 0 | 7.49 | 1766 | 22.50 | 4.49 | 1571320 |
| 0535 | .60 | 260.3 | | 0 | 7.51 | 1760 | 22.62 | 5.09 | 1572400 |
| 0555 | .60 | 258.2 | | 0 | 7.36 | 1613 | 22.41 | 4.40 | 1572730 |
| 0830 | .58 | 256.0 | | 0 | 7.81 | 1846 | 24.3 | 1.96 | 1573150 RAISED TO 572' |
| 0846 | .58 | 257.1 | | 0 | 7.64 | 1760 | 24.9 | 4.62 | 1573700 |
| 0901 | .58 | 257.2 | | 0 | 7.59 | 1756 | 25.0 | 2.04 | 1574500 |
| 0916 | .58 | 257.2 | | 0 | 7.61 | 1743 | 25.1 | 4.85 | 1575580 |
| 0942 | .58 | | | 0 | 7.61 | 1743 | 25.1 | 3.89 | 1576200 |
| 1054 | .58 | 258.8 | | 0 | 7.58 | 1743 | 25.1 | 1.36 | 1576900 |
| Comments: | | | | | | | | | |
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DEVELOPMENT FIELD DATA LOG


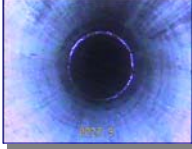


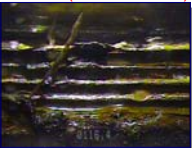
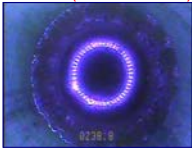




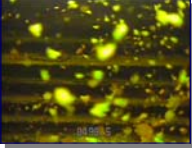

| | |
|---|--|
| Project Name: <i>FCI</i> | Project No.: <i>12968 2-007</i> |
| Well No.: <i>R-02</i> | Date: <i>4/3/18</i> |
| Location: | Measuring Point: <i>PVC sounder tube</i> |
| Total Depth of Well (ft bls): | Screen Interval (ft bls): |
| Pump Type/Setting (ft bls): <i>572 ft</i> | Activity: <i>pump development</i> |
| How Q Measured: <i>Flow meter</i> | H&A Personnel: <i>PKingar</i> |

[illegible]

APPENDIX I

Well Video Log and Gyroscopic Survey Reports

| | | | |
|---|----------------|---|---------------------|
| Client: Florence Copper | | Survey Date: April 11, 2018 | |
| Address: _____ | | Invoice: _____ Run: 1 | |
| City: _____ | Country: _____ | Well Name: R-02 | |
| Requested By: Haley and Aldrich | | P.O.: _____ | Well Owner: _____ |
| Copy To: _____ | | Camera: Aries BT9600 Color Camera | |
| Purpose: General Inspection | | Zero Datum: Top of Casing | |
| Location: _____ | | Depth: _____ | Vehicle: 750 |
| Field: Florence Copper | | Type Perfs: Horizontal Slots | |
| 1st Csg.O.D. 5 In. Csg Weight: _____ From: 0 ft. To: 522.4 ft. | | 2nd Csg.O.D. 5 In. Csg Weight: _____ From: 522.4 ft To: 1192.5 ft. | |
| Standing Water Level: 238.8 ft. Pumping Water Level: _____ Pump Depth: _____ | | O.D.Ref.: Measured Casing Buildup: None | |
| Operator: A. Olson Lat.: _____ Long.: _____ | | Sec: _____ Twp: _____ Rge: _____ | |

| Other Information: | | True Depths: | |
|--|---|-----------------|--|
| Wellbore Snapshots | | (SideScan-Feet) | WELLBORE / CASING INFORMATION |
| 0 Ft (See Other Side) | 27.9 Ft (See Other Side) | 0 | Zero Point - Top of Casing |
|  |  | 27.9 | Downhole view of FG casing and casing joint |
| | | 29.3 | Side scan of FG casing joint |
| | | 115.3 | Downhole view of FG casing / joint |
| 29.3 Ft (See Other Side) | 115.3 Ft (See Other Side) | 116.4 | Side scan of FG joint |
|  |  | 238.8 | Downhole view of Static Water Level |
| | | 269.1 | Downhole view below SWL - very poor visibility |
| | | 351.7 | Same as above |
| 116.4 Ft (See Other Side) | 238.8 Ft (See Other Side) | 450 | Side scan of FG casing |
|  |  | 492.8 | Downhole view of FG casing and joint - visibility poor but better than above |
| | | 493.5 | Side scan of FG joint |
| 269.1 Ft (See Other Side) | 351.7 Ft (See Other Side) | 522.4 | Top of SS transtion from FG to PVC |
|  |  | | |
| | | | |
| 450 Ft (See Other Side) | 492.8 Ft (See Other Side) | | |
|  |  | | |
| | | | |
| 493.5 Ft (See Other Side) | 522.4 Ft (See Other Side) | | |
|  |  | | |
| | | | |

Notes:

12 WELLBORE SHAPSHOTS

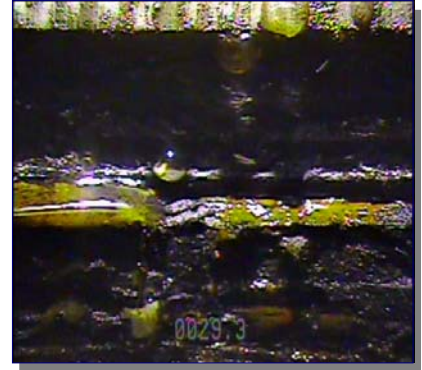
0 Ft (Enlargement)



27.9 Ft (Enlargement)



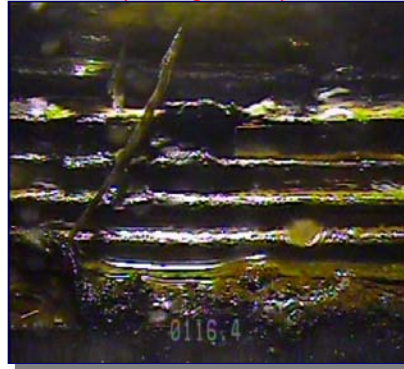
29.3 Ft (Enlargement)



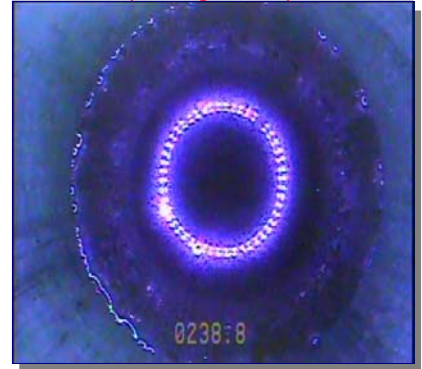
115.3 Ft (Enlargement)



116.4 Ft (Enlargement)



238.8 Ft (Enlargement)



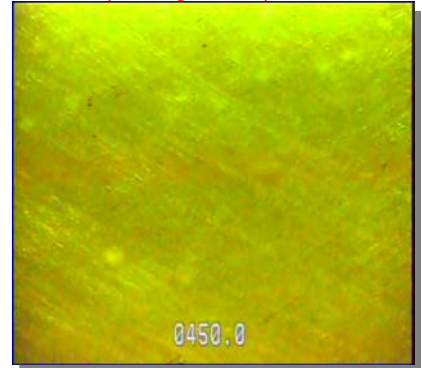
269.1 Ft (Enlargement)



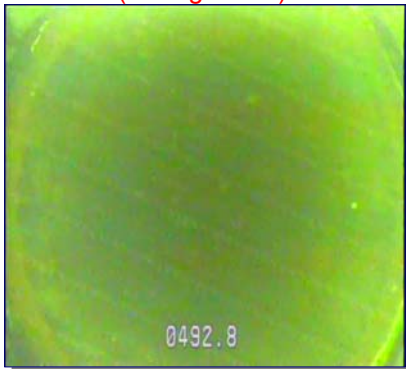
351.7 Ft (Enlargement)



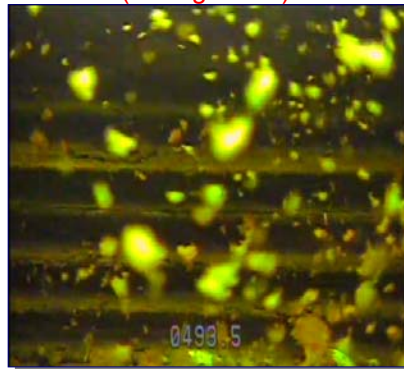
450 Ft (Enlargement)



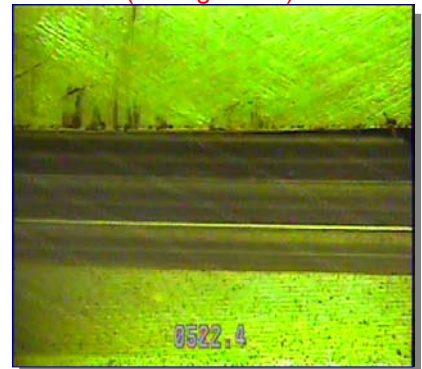
492.8 Ft (Enlargement)




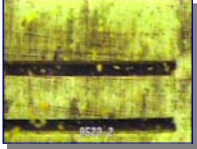
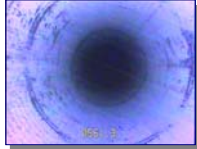

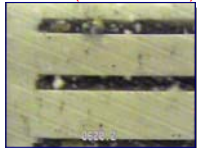
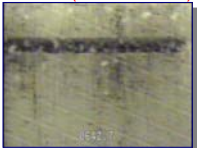
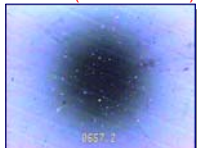


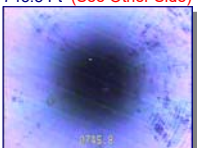


493.5 Ft (Enlargement)



522.4 Ft (Enlargement)



| | | | |
|---|----------------|---|---------------------|
| Client: Florence Copper | | Survey Date: April 11, 2018 | |
| Address: _____ | | Invoice: _____ Run: 1 | |
| City: _____ | Country: _____ | Well Name: R-02 | |
| Requested By: Haley and Aldrich | | P.O.: _____ | Well Owner: _____ |
| Copy To: _____ | | Camera: Aries BT9600 Color Camera | |
| Purpose: General Inspection | | Zero Datum: Top of Casing | |
| Location: _____ | | Depth: _____ | Vehicle: 750 |
| Field: Florence Copper | | Type Perfs: Horizontal Slots | |
| 1st Csg.O.D. 5 In. Csg Weight: _____ From: 0 ft. To: 522.4 ft. | | 2nd Csg.O.D. 5 In. Csg Weight: _____ From: 522.4 ft To: 1192.5 ft. | |
| Standing Water Level: 238.8 ft. Pumping Water Level: _____ Pump Depth: _____ | | O.D.Ref.: Measured Casing Buildup: None | |
| Operator: A. Olson Lat.: _____ Long.: _____ | | Sec: _____ Twp: _____ Rge: _____ | |

| Other Information: | | True Depths: | |
|--|---|-----------------|---|
| Wellbore Snapshots | | (SideScan-Feet) | WELLBORE / CASING INFORMATION |
| 522.8 Ft (See Other Side) | 523.2 Ft (See Other Side) | 522.8 | Bottom of FG transition from FG to PVC |
|  |  | 523.2 | Top of perforations - open and in good condition |
| | | 561.3 | Downhole view of perforations |
| | | 603.1 | Side scan of PVC joint |
| 561.3 Ft (See Other Side) | 603.1 Ft (See Other Side) | 620.2 | Side scan of perforations - open and good condition - small filter pack visible |
|  |  | 642.7 | Bottom of perforated section |
| | | 657.2 | Downhole view of blank section in PVC |
| 620.2 Ft (See Other Side) | 642.7 Ft (See Other Side) | 663.8 | Top of 2nd perforated section in PVC |
|  |  | 701.5 | Side scan of perfs - open with visible filter pack |
| | | 745.8 | Downhole view of perforations |
| | | 763.6 | Side scan of PVC joint |
| 657.2 Ft (See Other Side) | 663.8 Ft (See Other Side) | 800.2 | Downhole view of perfs - minor buildup up but still very clean and open |
|  |  | | |
| | | | |
| 701.5 Ft (See Other Side) | 745.8 Ft (See Other Side) | | |
|  |  | | |
| | | | |
| 763.6 Ft (See Other Side) | 800.2 Ft (See Other Side) | | |
|  |  | | |
| | | | |

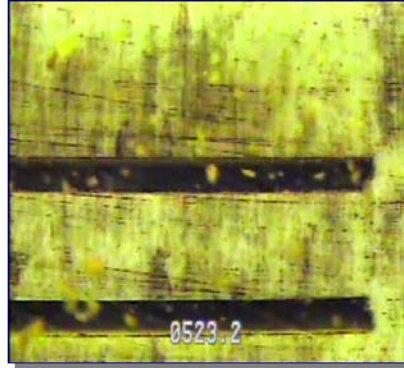
Notes:

12 WELLBORE SHAPSHOTS

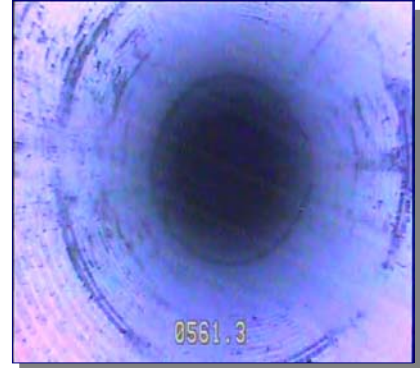
522.8 Ft (Enlargement)



523.2 Ft (Enlargement)



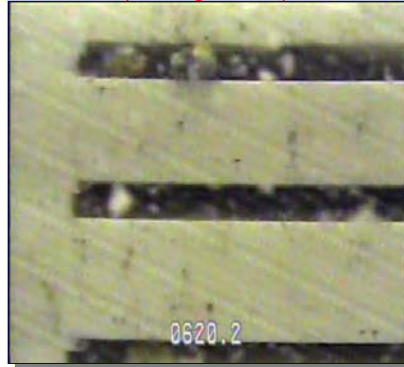
561.3 Ft (Enlargement)



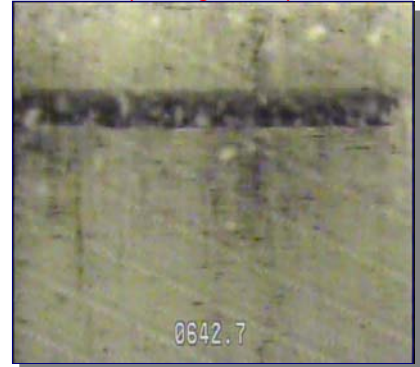
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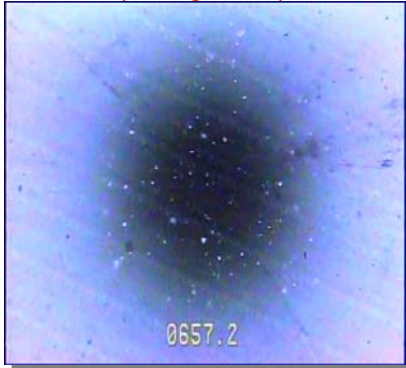
620.2 Ft (Enlargement)



642.7 Ft (Enlargement)



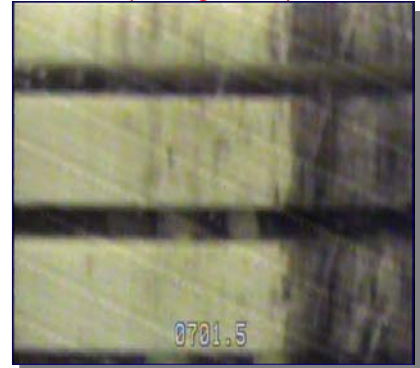
657.2 Ft (Enlargement)



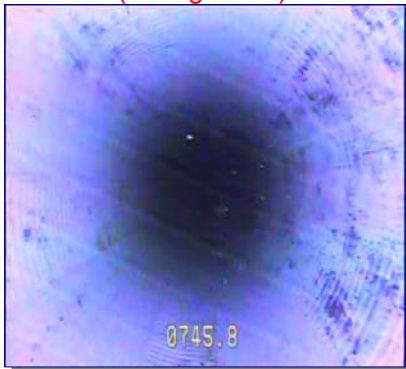
663.8 Ft (Enlargement)



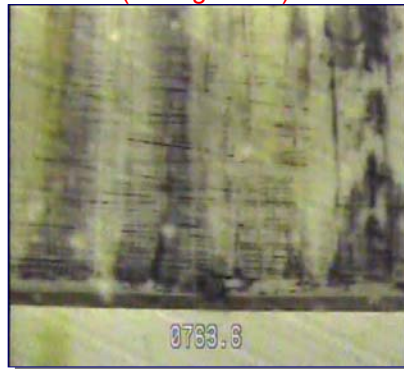
701.5 Ft (Enlargement)



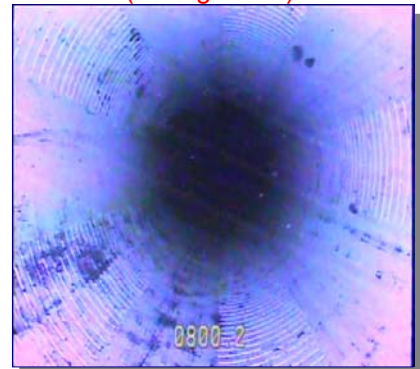
745.8 Ft (Enlargement)



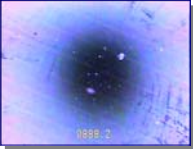



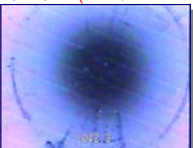

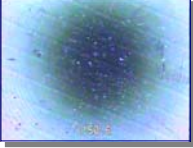
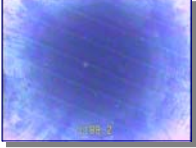



763.6 Ft (Enlargement)



800.2 Ft (Enlargement)



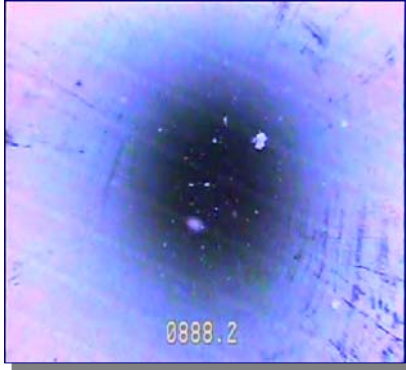
| | |
|---|---|
| Client: Florence Copper | Survey Date: April 11, 2018 |
| Address: _____ | Invoice: _____ Run: 1 |
| City: _____ Country: _____ | Well Name: R-02 |
| Requested By: Haley and Aldrich P.O.: _____ | Well Owner: _____ |
| Copy To: _____ | Camera: Aries BT9600 Color Camera |
| Purpose: General Inspection | Zero Datum: Top of Casing |
| Location: _____ | Depth: _____ Vehicle: 750 |
| Field: Florence Copper | Type Perfs: Horizontal Slots |
| 1st Csg.O.D. 5 In. Csg Weight: _____ From: 0 ft. To: 522.4 ft. | 2nd Csg.O.D. 5 In. Csg Weight: _____ From: 522.4 ft To: 1192.5 ft. |
| Standing Water Level: 238.8 ft. Pumping Water Level: _____ Pump Depth: _____ O.D.Ref.: Measured | Casing Buildup: None |
| Operator: A. Olson Lat.: _____ Long.: _____ Sec: _____ Twp: _____ Rge: _____ | |

| Other Information: | | True Depths: | |
|--|---|-----------------|---|
| Wellbore Snapshots | | (SideScan-Feet) | WELLBORE / CASING INFORMATION |
| 888.2 Ft (See Other Side) | 904.3 Ft (See Other Side) | 888.2 | Downhole view of blank section in PVC |
|  |  | 904.3 | Top of perforated section - good condition |
| | | 993.4 | Downhole view of perfs - casing is slightly dirtier here |
| | | 1,004.7 | Side scan of perfs - open and in good condition |
| 993.4 Ft (See Other Side) | 1004.7 Ft (See Other Side) | 1,042.3 | Downhole view of perforations |
|  |  | 1,100.4 | Side scan of perfs - still open and clean |
| | | 1,150.6 | Downhole view of perfs - slightly more suspended particulates with depth |
| 1042.3 Ft (See Other Side) | 1100.4 Ft (See Other Side) | 1,188.2 | Downhole view - casing much dirtier here |
|  |  | 1,190.9 | Side scan of dirty casing with perfs - perfs still mostly open with some silty fill |
| | | 1,191.9 | Downhole view of soft fill TD of well |
| | | 1,192.5 | Side scan of TD of soft fill in well |
| 1150.6 Ft (See Other Side) | 1188.2 Ft (See Other Side) | | |
|  |  | | |
| 1190.9 Ft (See Other Side) | 1191.9 Ft (See Other Side) | | |
|  |  | | |
| 1192.5 Ft (See Other Side) | | | |
|  | | | |

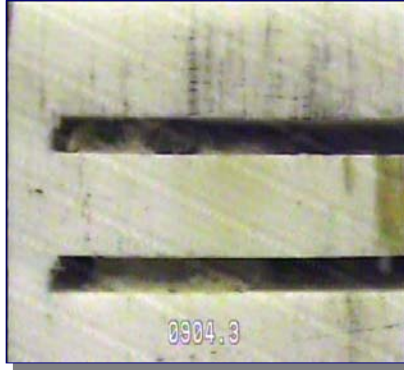
Notes:

11 WELLBORE SHAPSHOTS

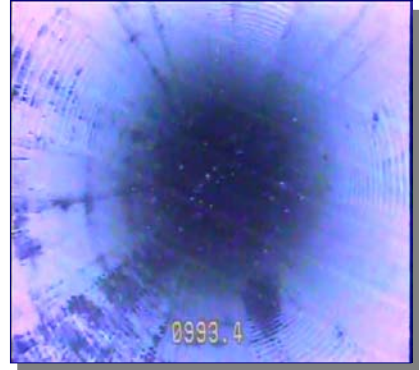
888.2 Ft (Enlargement)



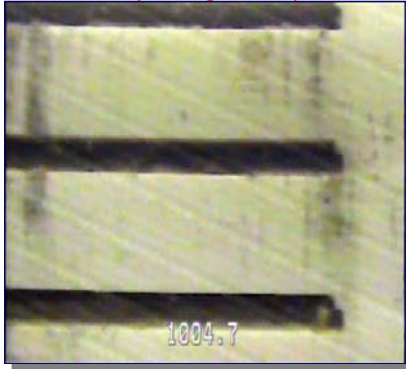
904.3 Ft (Enlargement)



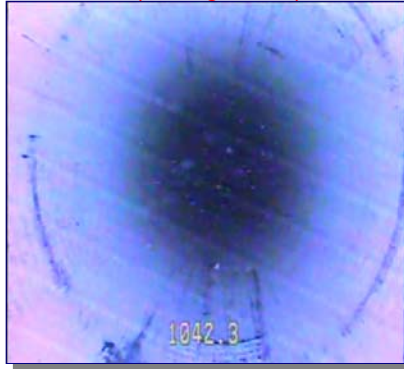
993.4 Ft (Enlargement)



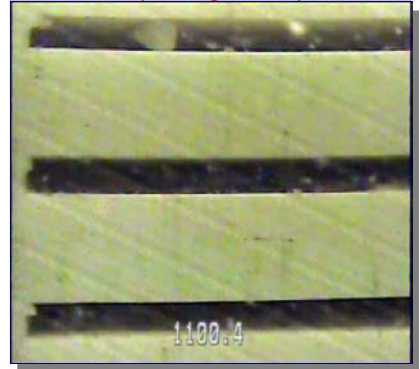
1004.7 Ft (Enlargement)



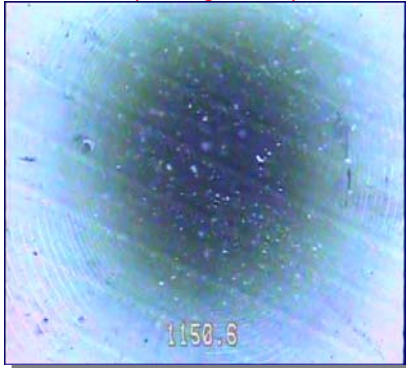
1042.3 Ft (Enlargement)



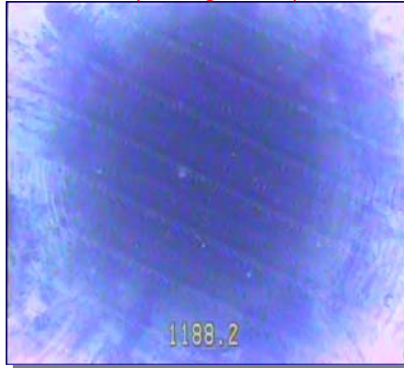
1100.4 Ft (Enlargement)



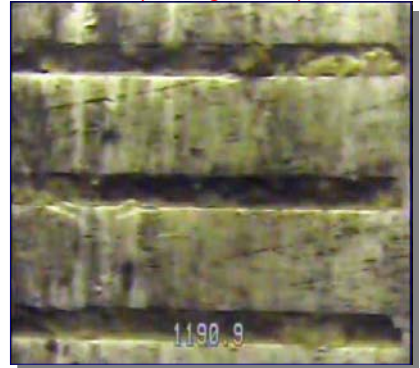
1150.6 Ft (Enlargement)



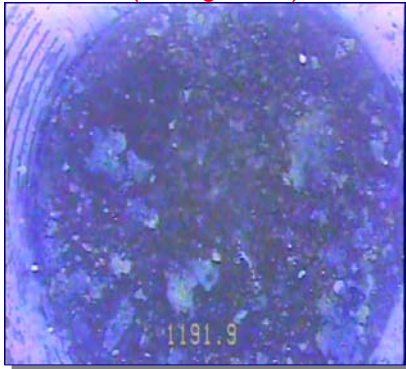
1188.2 Ft (Enlargement)



1190.9 Ft (Enlargement)



1191.9 Ft (Enlargement)



1192.5 Ft (Enlargement)



Drift Report

Wellbore DRIFT Interpretation

PREPARED ESPECIALLY FOR Florence Copper and Florence Copper R-02

Friday - April 13, 2018



This Wellbore Interpretation Package represents our best efforts to provide a correct interpretation. Nevertheless, since all interpretations are opinions based on inferences from electrical or other types of measurements, we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by Customer resulting from any interpretation made by this document. We do not warrant or guarantee the accuracy of the data, specifically including (but without limitations) the accuracy of data transmitted by electronic process, and we will not be responsible for accidental or intentional interception of such data by third parties. Our employees are not empowered to change or otherwise modify the attached interpretation. Furthermore, along with Eagle Pro Software we do not warrant or guarantee the accuracy of the programming techniques employed to produce this document. By accepting this Interpretation Package, the Customer agrees to the foregoing, and to our General Terms and Conditions.

Southwest Exploration Services, LLC
(480) 926-4558

WELLBORE DRIFT INTERPRETATION

Southwest Exploration Services, LLC

(480) 926-4558

| | | | | | | | | | | |
|--------------|-------------------------|--------------|--------------------------------|----------------------------|---------------------------------|---------|-------------|-----------|--------------|----------|
| Company: | Florence Copper | | | Well Owner: | Florence Copper | | | | | |
| County: | Pinal | State: | Arizona | Country: | United States | | | | | |
| Well Number: | R-02 | Survey Date: | Friday - April 13, 2018 | Magnetic Declination: | Declination Correction Not Used | | | | | |
| Field: | Florence Copper Project | | Drift Calculation Methodology: | Balanced Tangential Method | | | | | | |
| Location: | | | | | | | | | | |
| Remarks: | | | | | | | | | | |
| Witness: | H&A | Vehicle No.: | 310 | Invoice No.: | Operator: | E. BEAM | Well Depth: | 1220 Feet | Casing size: | 5 Inches |
| Tool: | Gyro - 1422 | | Lat.: | Long.: | Sec.: | Twp.: | Rge.: | | | |

| MEASURED DATA | | | DATA COMPUTATIONS | | | | | | |
|-----------------|--------------------------|----------------------|-------------------|----------------------|-----------------------|--|---|----------------------|------------------------|
| DEPTHS, feet | INCLINATIONS, degrees | AZIMUTHS, degrees | TVD, feet | T. LATITUDE, feet | T. LONGITUDE, feet | DOGLEG SEV., degrees per 20 Feet | DOGLEG SEV., degrees per 100 feet | DRIFT DIST., feet | DRIFT BGR., degrees |
| 0 | 1.48 | 146.42 | 0.00 | | | | | | |
| 20 | 1.57 | 205.59 | 19.99 | -0.462 | 0.025 | 1.00 | 8.87 | 0.46' (5.52") | 177.00 |
| 40 | 1.46 | 116.58 | 39.98 | -0.823 | 0.135 | 0.41 | 12.59 | 0.83' (9.96") | 170.70 |
| 60 | 1.48 | 143.31 | 59.97 | -1.144 | 0.517 | 0.96 | 4.15 | 1.26' (15.12") | 155.70 |
| 80 | 1.65 | 172.63 | 79.96 | -1.637 | 0.708 | 0.84 | 4.54 | 1.78' (21.36") | 156.60 |
| 100 | 1.67 | 207.12 | 99.95 | -2.182 | 0.612 | 0.43 | 5.32 | 2.27' (27.24") | 164.30 |
| 120 | 1.62 | 234.90 | 119.94 | -2.604 | 0.248 | 0.13 | 4.31 | 2.62' (31.44") | 174.60 |
| 140 | 1.64 | 238.31 | 139.93 | -2.917 | -0.227 | 0.44 | 0.53 | 2.93' (35.16") | 184.40 |
| 160 | 1.50 | 151.90 | 159.92 | -3.298 | -0.347 | 0.82 | 12.29 | 3.32' (39.84") | 186.00 |
| 180 | 1.48 | 093.82 | 179.91 | -3.546 | 0.034 | 0.95 | 8.72 | 3.55' (42.60") | 179.50 |
| 200 | 1.40 | 127.76 | 199.90 | -3.713 | 0.485 | 0.37 | 5.24 | 3.74' (44.88") | 172.60 |
| 220 | 1.49 | 153.04 | 219.89 | -4.094 | 0.796 | 1.00 | 3.93 | 4.17' (50.04") | 169.00 |
| 240 | 1.61 | 184.57 | 239.88 | -4.606 | 0.892 | 1.00 | 4.88 | 4.69' (56.28") | 169.00 |
| 260 | 1.61 | 223.88 | 259.87 | -5.089 | 0.675 | 0.33 | 6.04 | 5.13' (61.56") | 172.40 |
| 280 | 1.51 | 287.93 | 279.86 | -5.210 | 0.230 | 0.92 | 9.52 | 5.22' (62.64") | 177.50 |
| 300 | 1.44 | 011.09 | 299.85 | -4.882 | 0.028 | 0.77 | 11.92 | 4.88' (58.56") | 179.70 |
| 320 | 1.53 | 095.61 | 319.84 | -4.661 | 0.342 | 0.54 | 12.08 | 4.67' (56.04") | 175.80 |
| 340 | 1.70 | 170.72 | 339.83 | -4.980 | 0.656 | 0.02 | 10.95 | 5.02' (60.24") | 172.50 |

Page No. 1

True Vertical Depth: **1188.65'**

Final Drift Distance: **11.62' (139.44")**

Final Drift Bearing: **145.90°**

Note: Magnetic Declination is not used because it is not a factor in the calculation of well drift or alignment. Magnetic Declination is only important if attempting to hit a target or miss another well and then it is included in the calculations.

R-02

Page No. 2

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[illegible]

Final Drift Bearing: 145.90°

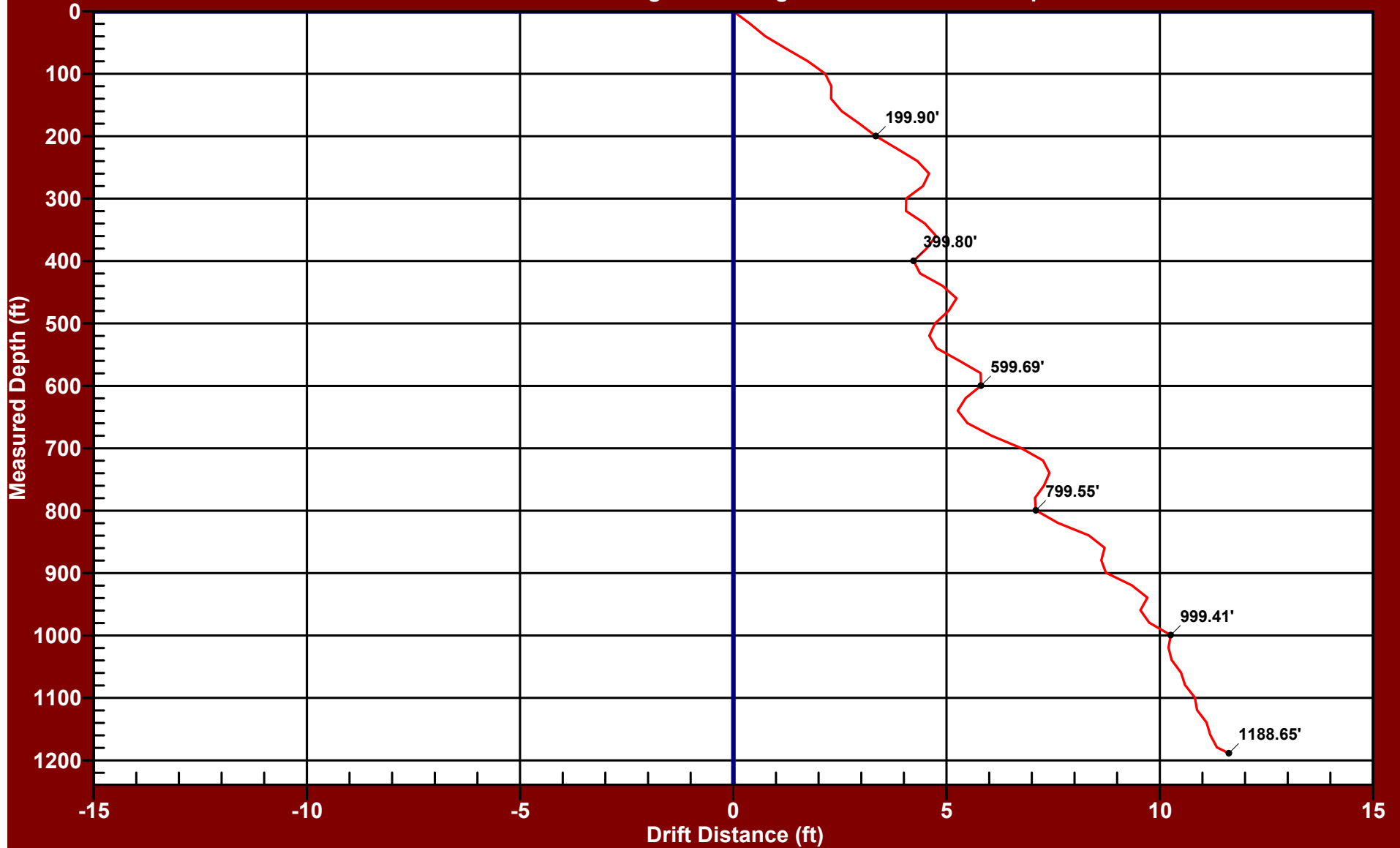
PLANE OF DRIFT VIEW - R-02

Florence Copper
Florence Copper

Drift Distance = 11.62 Feet

Drift Bearing = 145.9 Degrees

True Vertical Depth = 1188.65 Feet



Date of Survey: Friday - April 13, 2018

Balanced Tangential Calculation Method

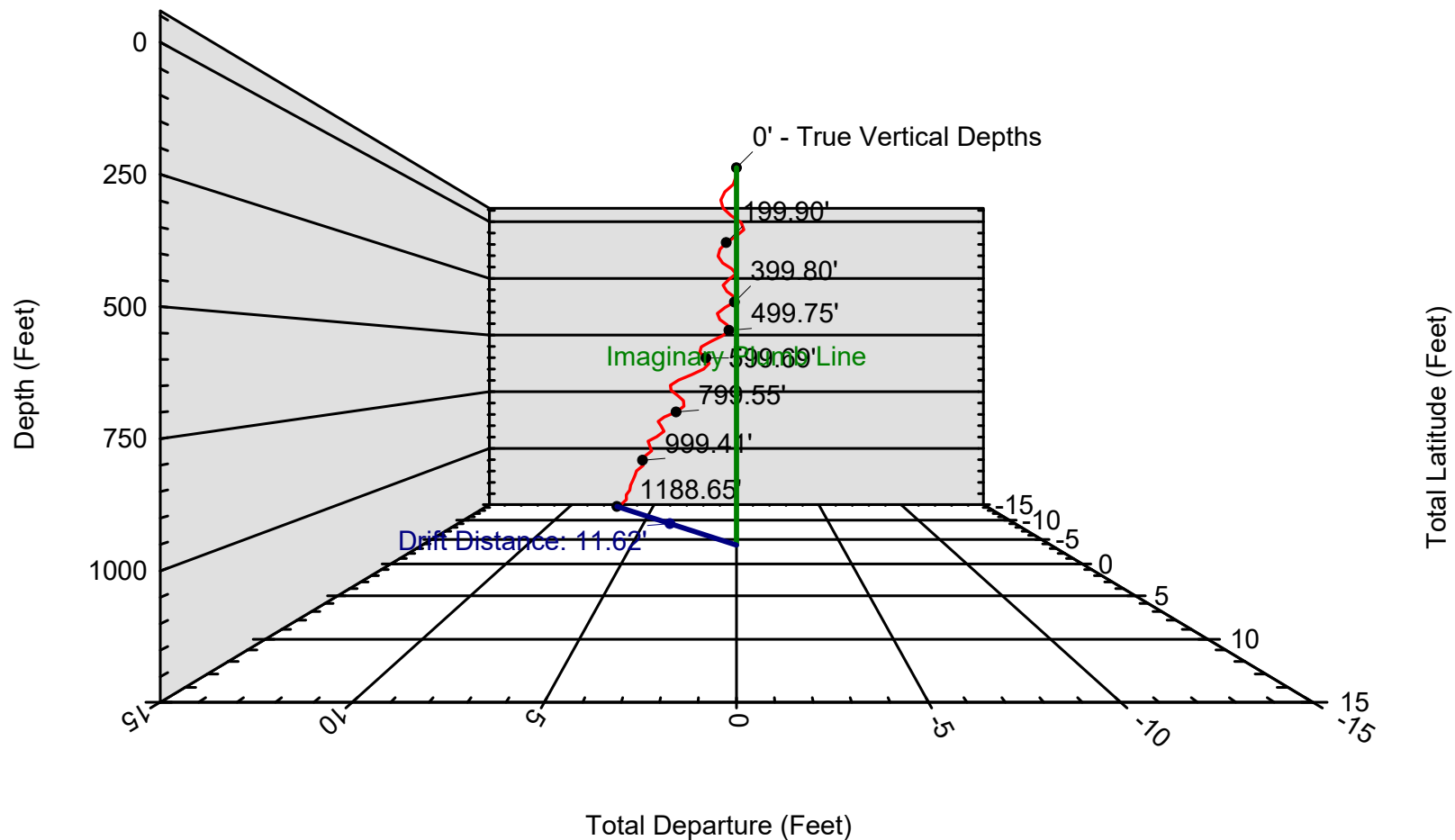
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3D PROJECTION VIEW - R-02

Florence Copper
Florence Copper

Drift Distance = 11.62 Feet Drift Bearing = 145.9 Degrees True Vertical Depth = 1188.65 Feet

0.0



Date of Survey: Friday - April 13, 2018

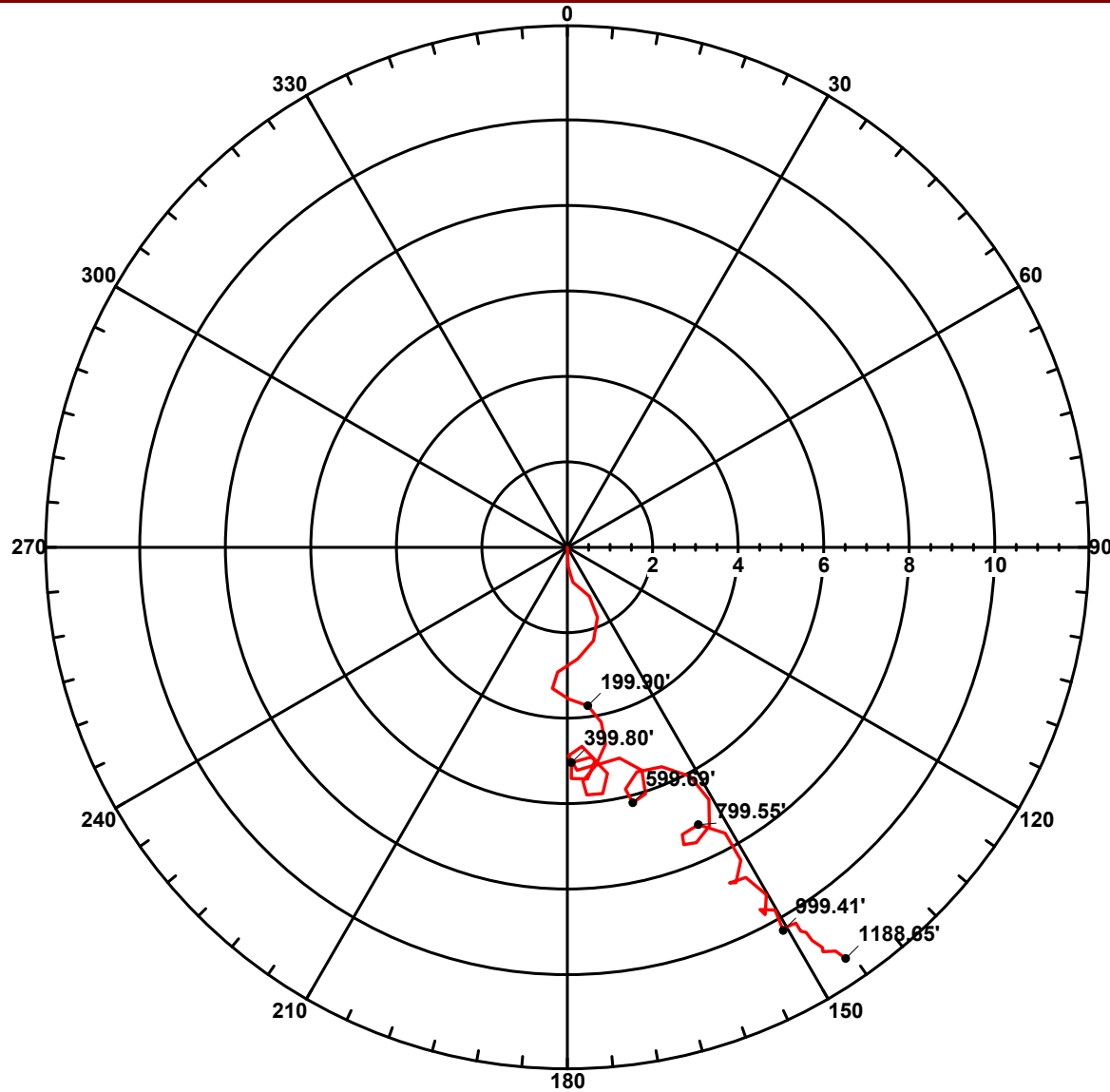
Balanced Tangential Calculation Method

Southwest Exploration Services, LLC (480) 926-4558

POLAR VIEW - R-02

Florence Copper
Florence Copper

Drift Distance = 11.62 Feet Drift Bearing = 145.9 Degrees True Vertical Depth = 1188.65 Feet



Date of Survey: Friday - April 13, 2018

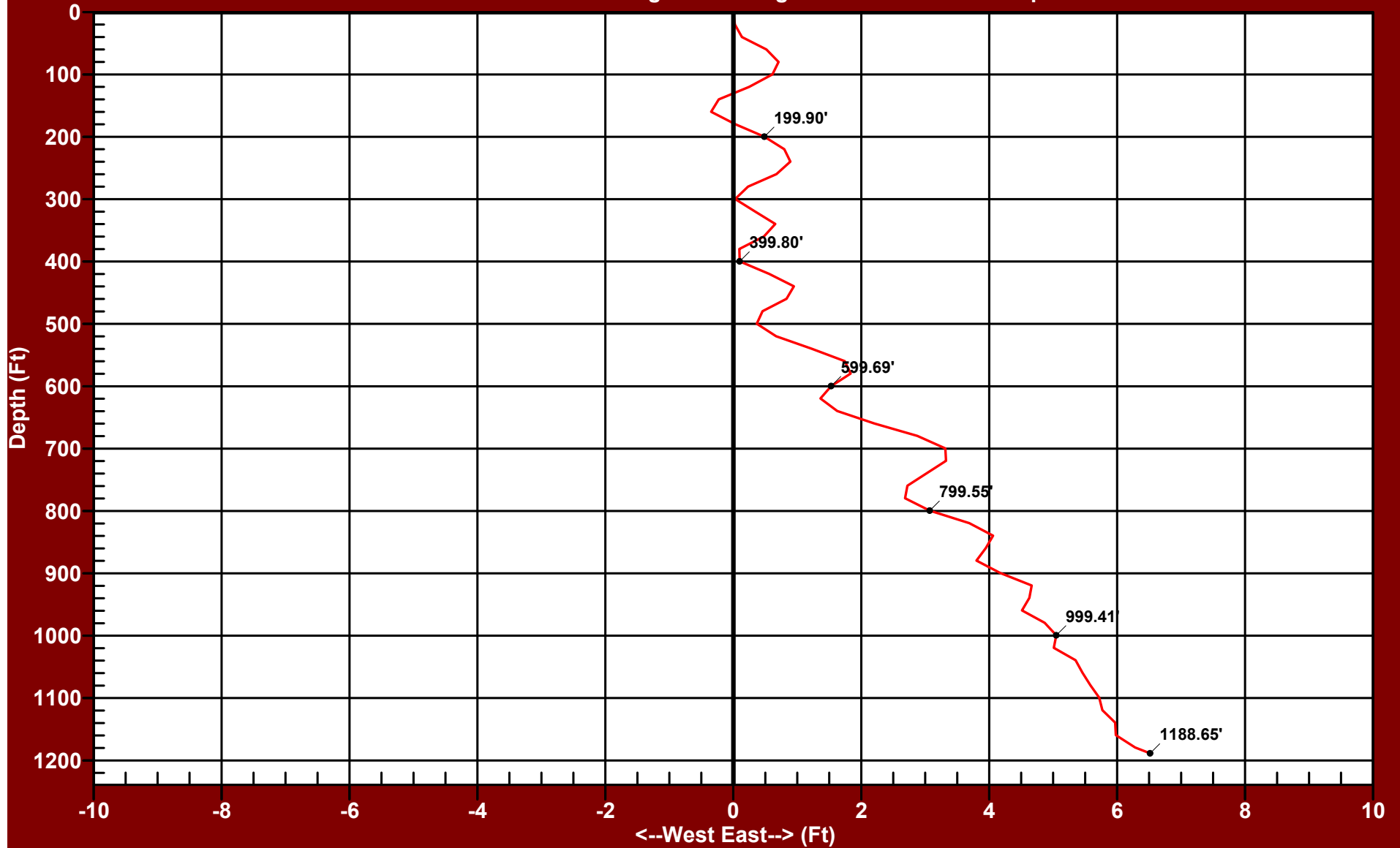
Balanced Tangential Calculation Method

Southwest Exploration Services, LLC (480) 926-4558

EASTING RECTANGULAR VIEW - R-02

Florence Copper
Florence Copper

Drift Distance = 11.62 Feet Drift Bearing = 145.9 Degrees True Vertical Depth = 1188.65 Feet



Date of Survey: Friday - April 13, 2018

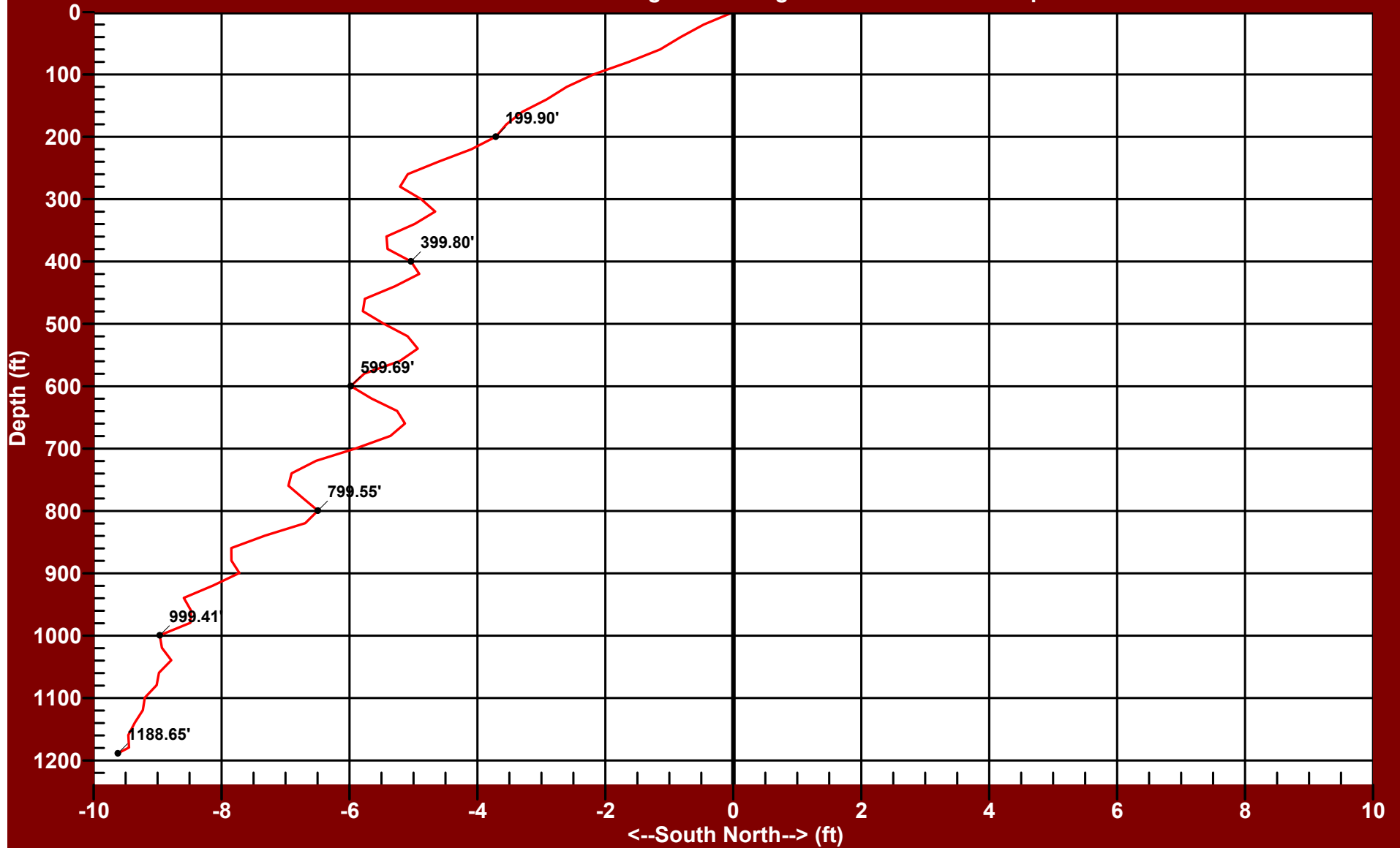
Balanced Tangential Calculation Method

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NORTHING RECTANGULAR VIEW - R-02

Florence Copper
Florence Copper

Drift Distance = 11.62 Feet Drift Bearing = 145.9 Degrees True Vertical Depth = 1188.65 Feet



Date of Survey: Friday - April 13, 2018

Balanced Tangential Calculation Method

Southwest Exploration Services, LLC (480) 926-4558